Robert Schuman Centre

European Unemployment: Macroeconomic Aspects

Unemployment in the EU Periphery: Problems and Prospects

FRANK BARRY, JOHN BRADLEY
and JOANNE MCCARTAN

RSC No. 97/47

EUI WORKING PAPERS

EUROPEAN UNIVERSITY INSTITUTE

EUI Working Paper RSC No. 97/47

Barry/Bradley/McCartan: *European Unemployment: Macroeconomic Aspects*
Unemployment in the EU Periphery: Problems and Prospects

—

The Robert Schuman Centre was set up by the High Council of the EUI in 1993 to carry out disciplinary and interdisciplinary research in the areas of European integration and public policy in Europe. While developing its own research projects, the Centre works in close relation with the four departments of the Institute and supports the specialized working groups organized by the researchers.

EUROPEAN UNIVERSITY INSTITUTE, FLORENCE

ROBERT SCHUMAN CENTRE

European Unemployment: Macroeconomic Aspects

Unemplyment in the EU Periphery: Problems and Prospects

FRANK BARRY*, JOHN BRADLEY**
and
JOANNE MCCARTAN**

*University College Dublin
**Economic & Social Research Institute, Dublin

Paper presented at the Conference of the RSC on
European Unemployment: Macroeconomic Aspects
held at the EUI on 21-22 Nov. 1996, and organised by Michael Artis
(in collaboration with the Economics Department and the European Forum)
with financial support from the European Commission, DG V

EUI Working Paper **RSC** No. 97/47

BADIA FIESOLANA, SAN DOMENICO (FI)

Printed in Italy in August 1997
European University Institute
Badia Fiesolana
I – 50016 San Domenico (FI)
Italy

Abstract

The four so-called "cohesion" countries (Greece, Ireland, Portugal and Spain) include economies with the highest rate of unemployment (Spain), an above average rate (Ireland), and one of the lowest rates (Portugal). But the rate of unemployment is not always a good proxy for the true nature and magnitude of the labour market problems and developmental challenges that these countries face in a post Single Market Europe.

We survey briefly the macroeconomic context and the key stylised facts of the four "cohesion" countries and examine the extent to which the existing econometric research literature presents a useful input to the preparation of policies designed to address labour market and competitiveness problems. We also describe the HERMIN model, which was designed to provide a uniform framework for use in the periphery.

We then explore the relevance of the European Commission's 1993 White Paper on *Growth, Competitiveness, Employment*, and suggest that a rather different policy focus may be required when moving from the core to the periphery of the EU. We conclude with an outline of the types of macro-policy issues that arise in the periphery when promoting the cohesion objective and a more robust labour market performance.

1. Introduction[1]

At the time of the signing of the treaty of Rome in 1956, the (then) EEC consisted of six member states that were reasonably homogeneous in terms of GDP per capita.[2] The first enlargement of the EEC in 1972 brought in as new members two wealthy core countries (the United Kingdom and Denmark) and one less developed peripheral country (Ireland). However, it was not until after the second enlargement in 1981 (Greece) and the third in 1986 (Portugal and Spain) that the issue of economic and social heterogeneity and regional inequality moved up nearer to the top of the EC policy agenda.[3] The *1992* Single European Market initiative put further pressure on the quest for policies that would help offset some of the tendencies towards divergence on the part of the periphery, although these issues were not addressed directly at that time in the major research programme that examined the probable consequences of the completion of the internal market [Cecchini (1988); Emerson et al (1988)].[4]

The increased concern for economic and social homogeneity in the EC (cohesion) resulted in a reformulation and expansion of the disparate group of policies aimed at structural and growth objectives under the title Community Support Framework (CSF). Policies grouped together included the European Regional Development Fund, the European Social Fund, and the Guidance Section of the very large Guidance and Guarantee Fund (EAGGF) of aids and support to agriculture.[5] In terms of their size and wide scope, the CSF policies are of crucial importance to

[1] **Acknowledgements:** This paper draws on the results of research carried out for the European Commission, D.G. XII, under contract JOU2-CT92-0257 and for D.G. XV under contract ETD/95/B5-3000/MI/86. Our understanding of the Greek, Portuguese and Spanish economies benefited greatly from discussions with Nicos Christodoulakis, Leonor Modesto, Jose Antonio Herce and Simon Sosvilla-Rivero. Errors, omissions and misinterpretations are our own responsibility.

[2] In 1960 the index of GDP per capita (in terms of purchasing power parity (PPP), where the EC average was 100) ranged narrowly from a low of 86.5 for Italy to a high of 118.6 for the Netherlands (ignoring Luxembourg's 158.5)). The regional problems of the mezzogiorno in Italy were the one serious exception to homogeneity. At that time, non-members Portugal and Greece stood close to 40 [C.E.C. (1993e)].

[3] In what follows, when we use the term "periphery" we will be referring to Greece, Ireland, Portugal and Spain, unless otherwise qualified.

[4] Explicit calculations of the 1992 effects were carried out using models of only five countries (Germany, France, Italy, the United Kingdom and Belgium). The effects of 1992 on the EUR 12 was on the basis of extrapolation of the weighted average of these five countries [Emerson (1988), pp. 262-264].

[5] In 1992 the EAGGF constituted about 61.2% of the total EC general budget [C.E.C. (1993e)].

the three smaller "Objective 1" countries (Greece, Ireland and Portugal), and, to a lesser extent, to the other assisted regions - particularly in Spain, Italy and the United Kingdom.

The implementation of the first CSF (Delors-I) covered the five-year period 1989-93. Moves towards economic and monetary union (EMU) and the signing of the Maastricht treaty in December 1992, under which many of the remaining areas of policy autonomy in the periphery are likely to be further constrained, were accompanied by another expansion of the size and scope of the CSF by some 50%. This second programme (Delors-II) will run for the six-year period 1994-99.

From the start of the CSF process, the clear aim was to encourage development and self sustaining growth in the less developed countries and regions, rather than to provide demand stimulus or income maintenance on a continuing basis. From a purely economic point of view, the CSF initiatives were seen as the means of providing the poorer member states and regions with a window of opportunity to rectify economic problems that were associated with their low level of income per capita, low rates of productivity and high unemployment and under-employment. Hence, the CSF funding was targeted at boosting productive capacity, employment and productivity in order to ease transition to the more competitive post-1992, post-EMU environment.
The almost certain absence for the foreseeable future of inter-national income transfers (i.e., the likelihood of an EU budget that remains small in comparison to the much bigger purely national redistributive budgets), has political implications for the future of intra-EU aid programmes.[6] However, the lessons to be learned from the Mezzogiorno experience in Italy are not encouraging and suggest that the narrower structural and developmental role for EU aid policies (such as the CSF) is perhaps necessary if there is to be any chance of producing the intended self-sustaining growth effects within the context of relatively modest budget allocations, and within a reasonable length of time (C.E.C. (1993d)).

It is against the above background that we must evaluate the relevance of the European Commission's White Paper *Growth, Competitiveness, Employment.* Its publication in 1993 was motivated by a concern with adverse developments in unemployment throughout the EU. By focusing purely on the periphery, our paper attempts to rectify the understandable orientation of the White Paper towards the preoccupations of the more advanced and developed core EU economies. Although the existing periphery is only a small part of the total EU economy -

[6]Even the relatively modest proposals of the MacDougall Report, where the EU budget would be some 7% of total EU GNP, have never met with any favour [MacDougall (1977)].

generating under 11% of its aggregate GDP in the year 1993, but containing almost 19% of total EU population - its problems are similar to, though not at all as serious as, those arising in the transition of the newly liberalised Central and Eastern European (CEE) economies. Hence, our insights can be generalised to a wider peripheral issue that will undoubtedly come to preoccupy the soon-to-be-enlarged EU during coming decades.

The paper is organised as follows. In Section 2 we discuss some general aspects of the economics of peripherality, concentrating on the four "cohesion" countries: Greece, Ireland, Portugal and Spain. In Section 3 we narrow our focus to labour market issues, including institutional arrangements. In Section 4 we review what the rather limited econometric literature has to say about the behaviour of issues related to the labour markets in the periphery, starting with the aggregate approach associated with the seminal work of Layard, Nickell and Jackman, 1991, and then moving to more sectorally disaggregated studies. In Section 5 we describe HERMIN, a four-sector macro model designed to explore issues in the periphery within a common framework. In Section 6 we examine the relevance of the policy recommendations contained in the White Paper in the light of the special characteristics of the peripheral member states. Section 7 concludes.

2. The EU Periphery: Background Economic Issues[7]

Our purpose in this section is to describe some of the similarities in economic structure that characterise the peripheral EU countries - Greece, Ireland, Portugal and Spain - and to analyse the structural changes that have taken place in these countries since they joined the EU.

We begin by looking at the convergence experience of the periphery (i.e. the extent to which these regions have caught up with the core in terms of GDP per capita). Although some convergence has occurred, these countries remain the poorest in the Union and it is not surprising therefore that they share many characteristics. Some of these are more apparent than others; the relative importance of agriculture and the underdevelopment of physical infrastructure, for example. Less obvious, however, are features such as the extent of unemployment and underemployment; the relative share of producer and consumer services, and the relative lack of increasing-returns-to-scale segments of manufacturing industry.

[7]This section draws on material contained in Barry, Bradley and Duggan (1996)

2.1 The convergence experience of the EU periphery

We use the term 'EU periphery' to denote those countries all or many of whose regions have 'Objective 1' status. These regions, with 75% or less of the EU average GDP per capita at the time of design of the CSF, essentially comprise the western and southern seaboards of the Union.

Has the periphery, thus defined, been converging on the richer regions, in terms of GDP per head, or not? The conventional wisdom in economic growth theory is that regions should converge over time. The world data (depicted in Barro and Sala-i-Martin (1995) for example), however, shows divergence rather than convergence. These authors and many others argue, however, that when the stock of human capital is controlled for, *conditional* convergence appears.

Walsh (1993) and O'Grada and O'Rourke (1994) control for this, though, and still find Ireland to be a slow-growth outlier in terms of European convergence. Prados *et al.* (1993) report similar findings for the whole European periphery. Many of these findings however depend strongly on the time period of the sample. Table 2.1 takes a broad look at the convergence experience and indicates fairly rapid convergence since the mid 1980s for Ireland and Portugal, less rapid convergence for Spain, and a tendency towards divergence for Greece.

Table 2.1: Relative GDP (GNP) per capita (EU15 =100)[a] (PPS)[b]

	1960	1973	1980	1985	1990	1993	1996
Ireland	60.3 (62)	59.8 (59)	63.3 (62)	64.8 (58)	71.0 (62)	80.2 (69)	93.8 (81.8)
Spain	57.2	75.1	70.7	69.8	74.5	77.8	76.7
Greece	42.6	62.7	64.0	62.4	58.4	64.5	64.5
Portugal	39.4	57.3	54.8	53.1	59.2	69.1	70.4

[a] 1960-90 including West Germany; 1991-96 including Germany
[b] GDP is measured in terms of its own purchasing power parity.

Source: Table 9: European Commission Statistical Annex (1996)
Irish GNP figures came from European Commission Annual Report (1994)

Using Barro and Sala-i-Martin's average convergence speed (2% p.a.), Ireland and Portugal appear to have performed quite well (in terms of GDP per head) since their respective accessions to the EU in 1973 and 1986.[8] This may be partly attributable to the CSF programmes, though there is some empirical evidence that trade integration also promotes convergence (Ben David, 1993). In the cases of

[8] Note that there is controversy in Ireland over the accuracy of recent GDP figures, many economists holding that they are overestimated due to the transfer pricing behaviour of multinational companies.

Spain and Greece, however, growth in living standards using this measure appears to be very slow. In all cases, with the exception of Ireland, there appears to have been zero growth in living standards during the period 1993 to 1996 in the cohesion countries.

If living standards are more accurately measured by private consumption per capita, as shown in Table 2.2, relative living standards are found to have risen in all the countries under study with the exception of Spain between 1973 and 1991 where, by this definition, living standards remained at a relatively high level. During the period 1991 to 1996 convergence continued for all these countries except Spain, which actually diverged slightly from the EU average over the period.[9] Again, this improvement could be linked to CSF expenditures in these countries. The convergence experience using these broad indicators is therefore ambiguous, and it is necessary to look at the structural differences between core and periphery and to ask whether the two groups of regions have been becoming more similar in these respects or not.

Table 2.2: Economic Indicators in the Periphery

	Greece	Ireland	Portugal	Spain	EU 15[a]
Unemployment Rate (%)					
1960	6.1	5.8	1.8	2.4	2.4
1973	2.0	6.2	2.6	2.6	2.6
1983	7.1	14.0	7.8	17.5	9.1
1993	8.6	15.7	5.7	22.8	10.9
1996	9.1	13.5	7.4	22.5	11.0
Private Consumption/Capita (PPS)[b]					
1960	57.2	76.1	45.9	63.6	100
1973	69.6	64.9	61.9	80.9	100
1991	72.4	71.3	67.1	80.1	100
1996	77.3	80.2	72.0	76.0	100

[a] 1960-90 including West Germany; 1991-96 including Germany
[b] Consumption is measured in terms of its own specific purchasing power parity
Source: European Commission Statistical Annex (1996)

[9] It should be noted, however, that given the massive restructuring that is taking place since the unification of Germany, any figure expressed as a percentage of the EU 15 average since 1991 will appear larger than it would have otherwise been without the inclusion of East Germany.

2.2 Structural similarities between peripheral regions

The European Commission's (1990) *One Market, One Money* report points out that the EU periphery is characterised by higher unemployment than prevails in the EU core. This is a statistical artefact, however, since Spain, the country with the highest unemployment rate, is also by far the largest peripheral economy. However, all the peripheral countries can be seen to suffer from either unemployment or underemployment (which does not show up in the standard data). In what follows, we focus on a number of shared characteristics that are likely to increase the burdens of adjustment on peripheral labour markets, factors such as the relative importance of agriculture, the difficulties of adjusting to free trade, and the relative underdevelopment of financial markets and of physical infrastructure in the periphery. We then move on to analyse other structural similarities between peripheral countries: relative proportions of producer and consumer services, and the share of increasing returns sectors within manufacturing.

Unemployment and underemployment

Table 2.2 above illustrates that two of the peripheral countries, Ireland and Spain, have very high unemployment rates, while Greece and Portugal have rates below the EU average. The less well developed nature of the social welfare systems in Greece and Portugal, however, and the large proportion of the labour force engaged in agriculture in these countries suggest a substantial degree of underemployment. This will be discussed in greater detail in Section 3.

Agricultural orientation

As the *One Market, One Money* report (C.E.C. (1990)) notes, Objective 1 regions have a relatively high share of employment in the declining agricultural sector. Of the four countries, Greece has the largest proportion of employees in agriculture (20.8% of total employment in 1994). This compares with 18.3% in Portugal[10], 13.2% in Ireland and 9.9% in Spain. This factor adds to the number of workers who must be absorbed into the urban labour force, or else, as in Portugal and Greece, provides a refuge in the form of underemployment for those who, in a more developed welfare system, would add to the unemployment rolls.

Underdevelopment of infrastructure and capital markets

Two further characteristics of peripheral regions appear likely to hinder the development of employment opportunities. One is the underdeveloped state of

[10]We use the 1991 figure for Portugal as there appears to be a discontinuity in the data for subsequent years.

financial markets. Larre and Torres (1991), in a study of Spain, Portugal and Greece, make the following points, many of which apply to Ireland as well:

> 'In the mid-1980s financial markets were still in their infancy, with ... little or no competition between banks and financial institutions; narrow capital markets; a limited range of savings instruments and a preponderance of public debt securities; credit controls (Greece and Portugal) and administratively fixed interest rates; compulsory portfolio requirements for banks, and a high proportion of subsidised credit'.

This theme is echoed in *One Market, One Money*, which reports that the high cost of credit and poor availability of risk capital are among the major factors that firms in peripheral regions identify as growth inhibiting.

The same report also notes that firms identify infrastructural deficiencies in the areas of education and training, transport and communications, and the supply and cost of energy, as more important impediments than geographical factors such as the proximity of suppliers and of customers. The available data on the stock of infrastructure in peripheral regions provide supporting evidence. Table 2.3 below, adapted from Martin and Rogers (1994), reports relative infrastructural levels for an aggregate of transportation, telecommunications, energy and education. It reveals that Ireland, Spain and Portugal fell further behind the EU average between 1979 and 1985, while Italy and Greece converged slightly.

Table 2.3: Relative Infrastructural Levels in EU Countries

	1979-80	1985-86
Italy	81.7	85.4
Spain	77.7	74.3
Ireland	71.1	67.1
Greece	54.5	56.0
Portugal	n.a.	38.7
EU	100.0	100.0

Source: Biehl (1986)

Difficulties of adjustment to free trade

Progressive trade liberalisation within Europe is likely to entail substantial industrial disruption in the periphery, while sectoral restructuring within core EU countries, which have fairly similar factor endowments, is more likely to take place through the development of market niches rather than through the wholesale disappearance of existing industries. Evidence in this regard is provided by Neven

(1990), who shows that Greece and Portugal have less intra-industry trade than the other EU countries; Ireland, Spain and Italy have intermediate levels, while Germany, France, the Netherlands, the UK and Belgium are characterised by intense intra-industry trade. Adjustment problems are therefore likely to be greater in the periphery.

As Krugman (1987) notes with respect to the Southern periphery's accession to the EU:

> 'The trade expansion produced by EC enlargement is simply not likely to be as painless as the trade expansion produced by the formation of the Community and earlier enlargement. There will certainly be income distribution problems created by the changes, and also quite possibly some real costs in terms of unemployment'.

A massive shake out of jobs in Irish and Spanish 'traditional' industry occurred as trade liberalisation progressed. The low productivity sectors in Greece and Portugal are also likely to face intense pressures in the next decade.

Further confirmation of the structural changes likely to be in store for Greece and Portugal is provided by the size structure of enterprises in peripheral regions, shown in Table 2.4. The National Economic and Social Council (1989) documents how the average size of establishments in Ireland declined in the wake of free trade as indigenous firms in increasing-returns sectors were wiped out. Something similar may have happened in Spain.[11] Portugal may therefore be thought to resemble the pre-free-trade Irish position, while the fact that nearly three fifths of Greek non-agricultural employment is concentrated in micro enterprises with less than ten employees probably does not augur well for their ability to compete internationally.

Table 2.4: Non-agriculture employment shares by enterprise size, 1988

	Greece	Ireland	Portugal	Spain	EU
Micro (0-9)	59	34	36	36	30
Small (10-99)	21	30	27	30	25
Medium (100-499)	11	18	17	17	16
Large (500+)	9	17	20	17	30

Source: First Annual Report of the European Observatory for SMEs (1993).

[11]On the basis of Ireland's adjustment, we would regard small initial firm size in increasing-returns sectors as a competitive disadvantage, rather than as representing an opportunity for the exploitation of further scale economies in an integrated market, as in Neven (1990).

The structure of the services sector

The economic geographers Keeble, Offord and Walker (1988) noted that the structure of the services sector differed significantly between core and periphery, with the core being relatively more specialised in producer services.[12]

Table 2.5 below shows the ratio of employment in producer relative to consumer services. It shows, as Keeble *et al.* suggested, that there is a substantial difference between the relative proportions accounted for by producer and consumer services in the core vis-à-vis the periphery.

Table 2.5: Ratio of employment in producer versus consumer services

	1968	1978	1983	1987
Belgium	.299	.33	.327	.332
Germany	.342	.316	.318	.314
France	.343	.351	.344	.343
Netherlands	.522	.308	.359	.362
Ireland	.241	.251	.354	.332
Italy	.40	.267	.262	.267
Portugal	n.a.	.259	.24	.225
Spain	n.a.	.294	.289	.269
Greece	n.a.	.457	.378	.345

Source: Duggan (1995)

It is clear that the core-periphery distinction is significant and long-lasting. Ireland, however, seems to have extricated itself from its peripheral position, particularly between 1978 and 1983, while Greece appears as the periphery outlier, with a ratio of producer to consumer services more like that of the core. The latter is easily explained however by the fact that Greece, containing as it does a large number of islands, possesses an unusually large transport, communications and storage sector which is part of producer services. Keeble *et al.* (1988) suggest that Ireland's core-like characteristics appear to be evidence of successful industrial policies.

Why does the core appear to be relatively specialised in producer services? Hansen (1990) argues that:

[12]Producer services are defined in the NACE and ISIC classifications as categories 7 (Transport and Communications) and 8 (Banking and Financial Services), while consumer services are categories 6 (Distribution, Hotels and Catering) and 9 (Community, Social and Personal Services).

> 'in an increasingly information-oriented economy, producer services play a pivotal role in the ... expanding division of labour, which in turn creates productivity increases throughout the economy. Regions that have a high density of producer services are thus likely to have higher per capita incomes than other regions'

Causation can equally plausibly run in the opposite direction. The fact that 'core regions almost always contain above-average concentrations of highly qualified workers' can be related to studies by Beyers *et al.* (1986) and Wier (1992) which showed that the producer services sector is dominated by professional and technical employees, while consumer services are typically labour-intensive low-productivity low-wage jobs. Whichever direction of causation is more important, it is clear that a high ratio of producer to consumer services jobs is beneficial.

Increasing returns-to-scale manufacturing sectors

Equivalently, it is beneficial for a region to have a high share of the manufacturing sectors that exhibit increasing returns to scale (IRS). As Heffernan and Sinclair (1990) note, average productivity in the regions that capture these sectors rises relative to that prevailing elsewhere.

One of the potential difficulties that the periphery faced in adjusting to EU membership was the possibility that as trade barriers fell these industries would be attracted more to the core because of economies of agglomeration. Indeed, as Barry (1994) showed, this process *did* result in the decline of Irish indigenous industry in IRS sectors.[13] However the influx of multinational companies in precisely these sectors more than dominated this decline, so the share of Irish employment in IRS sectors has increased substantially (Table 2.6).

Table 2.6: Developments in IRS industries in Ireland

	1973	1980	1993
Indigenous employment	25,209	27,440	22,565
Share of total manufacturing	12.46%	11.86%	11.64%
Multinational employment	32,735	50,114	59,055
Share of total manufacturing	16.18%	21.67%	30.46%

Source: IDA Employment Survey

[13] The IRS sectors are identified by O'Malley (1992) on the basis of Pratten's (1988) study of engineering economies of scale.

Summing multinational and indigenous employment, we find the share of IRS sectors in total manufacturing employment has risen from 29% in 1973 to 42% by 1993. While this is still small relative to the equivalent share in the core EU countries (Table 2.7 below), it has been increasing over time rather than decreasing.

Once again, we see a very clear core-periphery pattern emerging, with the periphery less specialised in IRS sectors. Unfortunately the paucity of data precludes an analysis of how this situation has changed over the course of the 1980s.

Table 2.7: Employment in IRS sectors as a % of total manufacturing employment

	1968	1979	1983	1989
Germany	55	60	65	63
France	42	55	55	51
Netherlands	50	62	54	54
Belgium	42	57	55	53
Italy	49	54	56	55
Ireland	21	35	40	45
Spain	n.a.	38	39	37
Portugal	n.a.	n.a.	28	25
Greece	n.a.	n.a.	36	35

Source: Eurostat: Structure and Activity of Industry, various years.

If the Irish experience is anything to go by, however, we can say that the periphery is likely to capture an increasing share of IRS industries. The data on foreign direct investment in manufacturing[14] reveal that while the Irish share of foreign direct investment (as a proportion of GNP) was twice as large as Spain's and three times as large as Portugal's in the early 1980s, the Portuguese and Irish shares had been equalised by the early 1990s, and the Spanish share was now twice as large as these. Only the Greek share remained low, and stagnant.

[14] Data from the *OECD International Direct Investment Statistics Yearbook*

3. Peripheral Labour Markets: Stylised Facts

In the previous section we discussed general aspects of the economics of peripherality. We now narrow our focus to the labour markets in the main EU peripheral areas: Greece, Ireland and Portugal and Spain[15]. We start with a review of labour market facts and then go on to examine the institutional arrangements in the periphery, such as the social welfare systems and wage bargaining systems in each of the countries under consideration.

3.1 Aspects of unemployment

Figure 3.1 shows the evolution of unemployment in each of these countries over the last three decades, all drawn to a common scale. It is clear that unemployment has been rising over time throughout the EU periphery, with some countries experiencing more unemployment than others. In Ireland and Spain, with current rates of 13.5% and 22.5% respectively, unemployment has not been *below* 10% since the end of the 1970s, while in Greece and Portugal the unemployment rate has yet to *exceed* 10% at any time over the last three decades and this still holds true with current rates of 9.1% and 7.4% respectively.

What this aggregated figure for unemployment cannot reveal are the important characteristics of those comprising the unemployed and also those within employment itself which would give a more accurate picture of the peripheral labour markets than an aggregate indicator could possibly provide. In this section, we examine specific forms of unemployment such as defined by age and duration and gender. We shall first consider the possibility of underemployment.

Underemployment

In any analysis of unemployment in the periphery, consideration must be given to the probability that there is significant underemployment. Underemployment is not a phenomenon that is recorded in any official statistics as is unemployment. As a result, we must use a proxy to capture it.

(a) Percentage employed in agriculture as a proxy for underemployment

Employment in the agriculture sector could be one such proxy, due to the family run nature of this sector. The above average importance of this sector in the periphery compared to the EU average has been briefly mentioned earlier. Figure 3.2 shows that in Greece the percentage of employed persons engaged in this

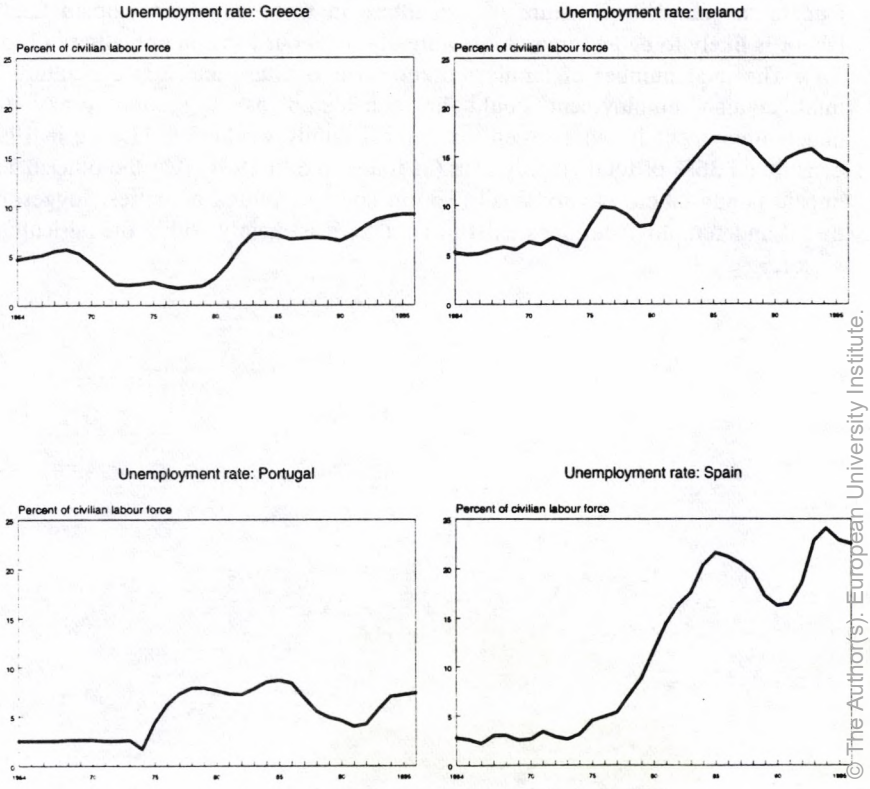
[15]Our analysis is also of some relevance to the Italian Mezzogiorno region and to Northern Ireland, both of which have "Objective 1 Status in the CSF.

sector remains very high compared with the rest of the EU, which may indicate that underemployment is prevalent and is disguised in a relatively large agriculture sector.

(b) Percentage self-employed as a proxy for underemployment

Due to the family run nature of agriculture in these countries, unpaid family labour is likely to be an important feature of the labour force in agriculture (Table 3.1). The total number of family workers in agriculture and non-agriculture in total civilian employment could be considered as a second proxy for underemployment It can be seen that unpaid family workers in Greece in 1991 constituted 36% of total employment (as it also did in 1981). On the other hand, unpaid family labour is very small (5%) in non agricultural activities, suggesting that if underemployment does exist in Greece, it is mainly within the agriculture sector.

Figure 3.1: Unemployment rates in the four cohesion countries



Ireland does not have as much unpaid family labour in either year as in the case of Greece. About 9% of employment in agriculture in 1991 was classified as unpaid family labour and this had fallen from 16% ten years previously. The level of unpaid family labour in non agricultural activities is negligible in Ireland, so it would appear that underemployment it is not an Irish problem.

The data for Portugal would suggest that between 1979 and 1991 unpaid family labour has either drifted into or been reclassified as the second category of employers and persons working on own account. But self employment in a declining sector such as agriculture may effectively be a form of underemployment. Recalling the unemployment rates in Table 2.2, Portugal had a below average unemployment rate compared to the EU average but it is likely that self employment in agriculture is where some underemployment is present.

In 1991 Spain had almost 20% of those employed in agriculture classified as unpaid family labour. a matter of concern when considered alongside the already high recorded unemployment rate. Again, a pattern emerges for Spain that there is a higher incidence of unpaid family labour in agricultural related employment compared to the non agricultural activities.

Table 3.1: Professional status of civilian employment: Cohesion countries

(a) Greece

Agriculture, hunting, forestry and fishing	**1981**	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	35 (3)	30 (4)
Employers and persons working on own account	657 (61)	487 (60)
Unpaid family workers	391 (36)	290 (36)
Total	1083 (100)	807 (100)
Non agricultural activities	**1981**	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	1664 (68)	1900 (67)
Employers and persons working on own account	680 (28)	792 (28)
Unpaid family workers	104 (4)	134 (5)
Total	2446 (100)	2826 (100)

(b) Ireland

Agriculture, hunting, forestry and fishing	**1981**	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	23 (12)	23 (15)
Employers and persons working on own account	142 (72)	117 (76)
Unpaid family workers	32 (16)	14 (9)
Total	196 (100)	154 (100)
Non agricultural activities	**1981**	**1991**
	thousands (%)	thousands (%)
Wage earners and salaried employees	839 (89.5)	830 (86.5)
Employers and persons working on own account	97 (10)	125 (13)
Unpaid family workers	5 (0.5)	4 (0.4)
Total	935 (100)	959 (100)

(c) Portugal

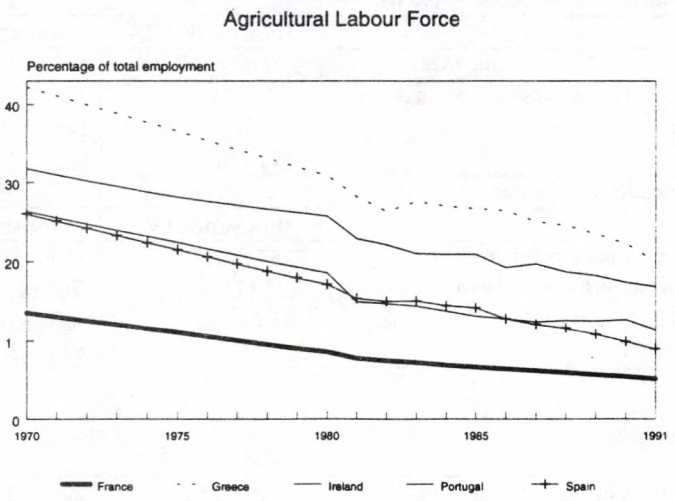
Agriculture, hunting, forestry and fishing	**1979***	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	239 (20)	140 (17)
Employers and persons working on own account	391 (33)	589 (70)
Unpaid family workers	547 (47)	106 (13)
Total	1177 (100)	836 (100)
Non agricultural activities	**1979***	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	2257 (84)	3195 (80.4)
Employers and persons working on own account	323 (12)	705 (18)
Unpaid family workers	97 (4)	63 (1.6)
Total	2677 (100)	3964 (100)

(d) Spain

Agriculture, hunting, forestry and fishing	**1981**	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	585 (28)	465 (34)
Employers and persons working on own account	989 (47)	640 (48)
Unpaid family workers	533 (25)	241 (18)
Total	2108 (100)	1345 (100)
Non agricultural activities	**1981**	**1991**
	thousands (%)	**thousands (%)**
Wage earners and salaried employees	7145 (78.5)	8867 (78.7)
Employers and persons working on own account	1502 (16.5)	1956 (17.4)
Unpaid family workers	461 (5)	440 (3.9)
Total	9108 (100)	11263 (100)

*Breakdown unavailable for Portugal in 1981
Source: OECD

Figure 3.2: Percentage of total employment in agriculture



High dependency rates

The dependency rate shown in Table 3.2 is defined as the ratio between the inactive and active population. If the welfare of all the population not in employment is considered to be dependent on those in employment, then Ireland, Spain and Greece have exceptionally high dependency rates. The seriousness of unemployment in the periphery has already been highlighted above but the extent of the problem is even greater if dependency rates are also taken into account.

Table 3.2: Percentage inactive relative to active population

	Greece	Ireland	Portugal	Spain	EU 15[16]
1980	165.2	172.7	116.6	177.0	133.7
1982	150.8	169.1	119.0	177.4	131.5
1984	144.2	170.0	113.5	175.7	218.8
1986	144.6	170.7	116.2	172.2	126.4
1988	141.3	169.9	112.9	159.2	121.9
1990	141.9	167.7	107.3	154.1	120.8
1992	144.4	160.9	105.7	153.3	117.6
1994	140.9[a]	155.2	104.8	149.3	120.5

Source: Eurostat Labour Force Survey 1980 1994
[a] 1993 Figure

In Ireland in 1994 this ratio was 155.2%, in Spain 149.3% and in Greece 140.9%, compared to an EU average of 120.5%. Portugal is the exception, with a low rate of 104.8%. This places a greater burden on the social welfare system or, in the absence of a developed social welfare system, the burden lies with other family members as in the case of Greece, which has considerable unpaid family labour in agriculture. As mentioned, the magnitude of unemployment is a major component of this problem, as well as the demographics of each of these countries which result in very young and very old populations.

Youth Unemployment

We show two measures of youth unemployment. The first measure recorded in Table 3.3(a) is as a percentage of total unemployment, indicating the component within unemployment that comprises those under 25 years of age. Unfortunately data are only available from 1983 onwards. From this table, it can be seen that in 1994 at least 25% of total unemployment was in the 20 to 24 age group for all the countries under study. A large figure may be indicative of a failure of the educational system to match the labour requirements of industry. It may also suggest a youthful population.

The second definition of youth unemployment used in Table 3.3(b) is the proportion of total population aged 15 to 24 which is in the labour force and not currently working for pay or self employed. This is interesting in that a large figure compared to the rate for all age groups would again suggest that the young

[16]Figures for EU 15 include the new German Lander from 1991 onwards. Prior to 1991 this figure refers to EU 12.

labour force were receiving inadequate training and were not able to compete with the older labour force due to lack of skills or experience.

Table 3.3(a): Youth unemployment (under 25 years of age) as a per cent of total unemployment (Definition 1)

	Greece	Ireland	Portugal	Spain	EU 15[17]
1983	40.7	40.3	54.3	52.9	45.3[$]
1987	43.8	36.1	48.1	47.4	39.1[$]
1990	45.4	32.4	42.7	40.1	34.4[$]
1994	39.2	31.4	33.9	33.5	28.2

Source: Eurostat (1996) Employment and Unemployment: Aggregates 1980-1994
[$]EU 12 is the EU 15 excluding Sweden, Finland and Austria.

In the case of Greece, youth unemployment (definition 1) has remained fairly stable at around 40 to 45% throughout the period 1983 to 1994. In the case of Ireland, this figure has been gradually falling from a peak of 40% in 1983 to 31.4% in 1994. One explanation for this could be the increasing trend for young people to stay on longer in the educational system. Portugal appeared to have the greatest level of youth unemployment in the early 1980s compared to the other countries, with rates of over 50%. This has since fallen to about 34% in 1994 for reasons similar to those for Ireland. In the case of Spain, this figure was 33.5% in 1994 but it had fallen from almost 46% in 1991.

Youth unemployment in Greece is quite a severe problem by either definition. In 1994, the youth unemployment rate (14-24 years) when calculated as a percentage of total labour force in this age group (definition 2) stood at 27.7% compared with a total unemployment rate of 9.6%. Spain has a very large youth unemployment rate also with the rate in 1994 standing 45.3%. Portugal appears to have the lowest incidence of youth unemployment of 15.1% according to definition 2 in 1994. One possible reason for this could be that the younger population were benefiting from the strong employment growth experienced in Portugal in the late 1980s. This would appear to be the case when one considers that youth unemployment fell from 15.3% in 1987 to 8.8% in 1991 (a fall of 6.5 percentage points) while the unemployment rate for all ages fell by only 2.7 percentage points over the same period from 7.0% in 1987 to 4.3% in 1991. This

[17]Figures for the EU 15 include the new German Lander from 1991 onwards.

would indicate that the younger population was more likely to have the required skills for the new public sector jobs that were being created.

Table 3.3(b): Youth unemployment rates (under 25 years of age) as a per cent of total labour force in this age group (Definition 2)

	Greece	Ireland	Portugal	Spain	EU 15[18]
1975		14.2	9.8	9.0	
1980			16.5	25.4	
1983	21.1	20.5	18.2	41.9	21.8[$]
1987	22.9	24.3	15.3	43.2	20.6[$]
1990	21.5	19.4	10.0	32.3	16.1[$]
1994	27.7	23.3	15.1	45.3	21.8

Source: Eurostat (1996) Employment and Unemployment 1980 1994
Figures prior to 1983 from OECD Labour Force Statistics 1972-1992
[$]EU 12 only i.e. excludes Sweden, Finland and Austria.

Unemployment rates by degree of urbanisation

The data in Table 3.4 suggest that in the case of Greece, measured unemployment is heavily concentrated in the urban areas but is much lower and apparently stable in the rural areas. However, results from surveys suggest that rural areas are subject to much higher levels of underemployment[19]. This trend of high urban unemployment and low rural unemployment, does not appear to follow for the other countries under study for the year 1994 as the rates do not appear to be significantly different from each other.

[18]See previous footnote.

[19]Commission for the European Communties, Country Studies (1992): Greece, No.9, July, Directorate General for Economic and Financial Affairs,.

Table 3.4: Unemployment rates by degree of urbanisation in 1994

	Greece*	Ireland	Portugal	Spain	EU 15[20]
Unemployment rate	8.9	14.6	6.7	24.3	11.4
Densely populated area	11.2	16.1	7.7	24.3	12.2
Intermediate	6.8	n/a	4.3	26.5	9.6
Thinly populated area	3.8)	13.6	7.3	22.8	11.8

Source: Eurostat Labour Force Survey 1994

Long-term unemployment

Long term unemployment (LTU) is defined as those out of work for more than 12 months. Table 3.5 shows this component as a percentage of total unemployment. Comparable data were not available for these countries prior to 1983. It can be clearly seen that the incidence of LTU in all of the countries under study is very high and has been an important feature since the from when the data were available.

Table 3.5: Long term unemployment as a per cent of total unemployment

	Greece	Ireland	Portugal	Spain	EU 15[21]
1983	32.3	35.2			
1987	43.9	63.8	53.4	60.6	52.8
1990	49.5	64.7	44.1	51.1	48.6
1994	50.5	64.3	43.4	52.7	48.0

Source: Eurostat (1996) *Employment and Unemployment: Aggregates 1980-1994.*
[$]EU 12 is the EU 15 excluding Sweden, Finland and Austria.

In the cases of Greece and Ireland, this rate has been rising over time although by different amounts. In the case of Greece, LTU has risen from 32.3% in 1983 to 50.5% in 1994. In Ireland, the situation is more disturbing as the rate has risen from 35.2% in 1983 to 64.3% in 1994. In the cases of Portugal and Spain, LTU appears to have fallen during the period 1986 to 1994 for which data were available, although only by 10 and 6 percentage points respectively. In the cases

[20]Figures for the EU 15 include the new German Lander from 1991 onwards.

[21]See previous footnote.

of Ireland and Spain, which had the highest rate of LTU in 1994, the social welfare entitlement system is more developed, a factor that also serves to encourage registration as being unemployed rather than departure from the labour force.

Unemployment broken down by gender

Unemployment rates for each of the four cohesion countries has been broken down by gender in Table 3.6. In Greece, unemployment among females in 1994 (13.7%) is considerably higher compared to their male counterparts (6.0%). Similar marginalisation of women prevails in the Spanish labour market where, in 1994, the female unemployment rate 31.5% greatly exceeded the male rate of 19.9%. The female youth unemployment rate in Spain, not shown below, was again 12 percentage points higher than the male youth rate. In Ireland and Portugal, unemployment has been higher among females than males but to a small extent.

Table 3.6: Male and female unemployment rates

	Greece		Ireland		Portugal		Spain		EU 15**	
	M	F	M	F	M	F	M	F	M	F
1974	n/a	n/a	6.6	3.7	1.2	2.4	2.6	2.9	2.9	2.9
1977	n/a	n/a	10.1	6.9	5.2	10.3	4.9	5.5	5.0	6.0
1980	n/a	n/a	8.8	7.1	3.5	13.0	10.4	12.8	5.3	7.2
1983	5.3	10.6	13.3	15.4	4.9	11.8	16.2	20.5	8.4	11.3
1987	4.6	10.4	15.9	18.0	5.3	9.0	17.0	27.7	8.6	12.6
1990	3.9	10.8	12.8	14.6	3.2	6.2	11.9	24.1	6.5	10.4
1994	6.0	13.7	14.4	15.0	6.1	8.0	19.9	31.5	10.0	12.8

Source: Eurostat employment and unemployment (various editions)

**Prior to and including 1990 these figures refer to the EU 12.

**1980 - 1982 refer to EU 10; Prior to and including 1979 refer to EU 9

3.2 Social Welfare Systems in the Periphery

The contrasting unemployment outcomes in the periphery broadly mirrors differences in social welfare systems. In the OECD, increases in the generosity if unemployment insurance, both in terms of replacement rates and duration of benefits, have been associated with rising unemployment and a high incidence of long-term unemployment, particularly in Spain and Ireland. Equally, the limited social welfare systems in Greece and Portugal cast doubt on the extent to which the recorded unemployment figures are an accurate representation of the true magnitude of unemployment in these countries.

The institutional setting in the Greek labour market reflects several distinguishing characteristics of the economy. Specifically, about half the economy is made up of the self employed - split roughly between agriculture and other sectors - and the vast majority of firms are very small economic units with few employees, who are often of the same family. Partly as a result, but also arising from cultural factors, there exists a strong family support system in place, which serves as a social safety net rather than a well developed publicly provided system of social security. The institutional framework has accommodated these factors, and may assist in perpetuating them. For example, the unemployment benefit system is ungenerous by international standards, as unemployment has only been recently recognised as a serious problem. Thus benefits do not provide the disincentive to work embodied in the official support systems of other countries such as Ireland [OECD (1996a)].

The Portuguese social security system, is a relatively new system compared to those of other European countries. The system was fundamentally changed in 1974, becoming universal with the creation of the non-contributory scheme. Protection continues to differ for some categories of workers (e.g. banking and public sector) who remain covered by special regimes outside the general system. Plans to incorporate these special regimes have not been fully put into effect.
Since 1985 social security expenditure has increased more rapidly in Portugal than in the rest of the OECD, although at an estimated 11.8% of GDP in 1995 spending was still well below the EU average of around 18%. In particular, such expenditure was low in each of the major categories including unemployment benefits. The current unemployment insurance scheme requires that claimants should have held a job for at least 540 days in the preceding 24 months, while the maximum duration of the benefit is related to the worker's age. In 1995, the average benefit period was 17 months. Portugal's social security system imposes a high tax on labour directly, as unlike other European countries, general tax revenues are not used to finance welfare programmes [OECD (1996b)].

Between 1970 and 1992, the Spanish Government significantly expanded the coverage and generosity of the unemployment insurance system. Since then, reforms aimed at reducing the budgetary cost of this component of public expenditure were introduced which included tighter controls against fraud, stricter eligibility conditions and reductions in the duration of benefits. Benefit fraud is considered to be a serious problem in Spain, which is believed to have a thriving underground economy. At present, the Spanish unemployment system remains generous by the standards of other OECD countries. Earnings related benefits have typical replacement rates of around 70% falling to 60% after a period of six months for a maximum duration of 24 months (for those having contributed for at least six years during the previous 12 years). For individuals with family

responsibilities unemployment assistance benefits are also available for up to an additional 18 months [OECD (1996c)].

While the Spanish social welfare system is an intermediate case, the Irish system in effect offers permanent support to the unemployed. Benefits paid are predominantly flat rate with increases for adult and child dependants, unrelated to income when in work. Unemployment benefit includes a limited earnings related element but mainly depends on the contribution record of the person concerned and is payable for up to 15 months. At the end of this period and where there is no entitlement to benefit, means tested social assistance is paid indefinitely to these without income for a legitimate reason and where income and savings are below a specified level. The rates at which assistance is paid tends to be lower than benefit rates but in contrast to the Southern periphery, the scheme is designed to bring income up to a subsistence level [C.E.C. (1993c)].

3.3 Wage Determination Systems in the EU Periphery

Because of the centrality of wage determination in closing models of the labour market, it is worth looking at the institutional wage setting framework in the periphery prior to our examination of econometric work in Sections 4 and 5 below. Broadly speaking, wage setting ranges from a fairly centralised system in Greece, through to more flexible approaches in Portugal. Each country shall be described briefly below.

During the 1980s, the wage bargaining system in Greece followed an automatic indexation system (ATA). The government set non-binding wage increases and these, combined with indexation to inflation, produced large wage increases and a reduction in inter-sectoral wage differentials. Since 1990, however, radical improvements have been made to the wage formation system. The most important contributions of the 1990 reforms were the abolition of an automatic indexation mechanism and the decentralisation and broadening of the collective bargaining process to provide for settlements at the sectoral and firm level. Other attempts at improving labour market flexibility include the removal of restrictions on part time work since 1991 and limits have been imposed on sudden strikes, particularly in public utilities. Although improvements have been made, the strike record in public utilities remains poor. The decline in union density since 1985 may be signalling a less militant, less politicised labour market environment. Nevertheless, trade unions remain powerful and are sustained by political affiliations, as well as favourable strike and lock out legislation [OECD (1996a)]. Since Spain's entry in 1986 to the EU, a range of structural factors still restrict flexibility in the labour market. For example, a strict system of employment protection legislation (including job demarcation rules) has led to excessive

severance payments and low rates of hiring; the wage bargaining system is inflexible; and since the 1980s there has been a relatively generous benefit system. Together, all these factors have acted as disincentives to the take-up of jobs.

Focusing on the wage bargaining system, collective bargaining at the regional and sectoral level determines the bulk of wage increases, leaving little room for firm-level wage flexibility. Pay norms established during collective negotiations apply more or less uniformly across all regions and sectors concerned and there is widespread use of indexation clauses. Nearly all firms and 75% of workers' wages are determined by collective bargaining agreements, despite union membership being low at around 16% of all workers[22]. Most often, the companies involved in negotiations are those which can afford to pay the highest wages. Despite reforms in 1994 to make wages more responsive to local conditions instead of simply adjusting according to collective agreements, firms experiencing financial difficulty have not been very successful in getting workers to agree to deviations from regional and sectoral agreements [OECD(1996c)].

Portugal and Spain are polar opposites in terms wage rate behaviour. The Portuguese labour market showed considerable resilience in absorbing the oil price and labour supply shocks of the 1970s. In fact, empirical research suggests that nominal wage growth responds rather strongly to the rate of unemployment compared with most other OECD countries. In the second half of the 1980s, the new growth opportunities provided by EU membership led to a parallel reduction in unemployment and wage inflation. In contrast, the disinflation of the 1990s has been associated with rising unemployment as might be expected but the small magnitude of this increase signifies a substantial short term trade off [OECD (1996b)]. Larger earnings differentials at all levels is also supportive of the case that substantial wage flexibility still remains in Portugal, even if it is more likely to be a consequence of an underdeveloped social welfare system rather than deliberate wage restraint on the part of well organised powerful trade unions. Minimum wages were instituted in 1974 but have had little effect on the wage negotiation process in recent years, with only 6.5% of employees being paid at the minimum wage level in 1993 [OECD (1993c)].

The Irish experience since 1987 has also been one of tripartite centralised bargaining with agreements of three years duration concluded in 1987, 1991 and 1994 [OECD (1993b)]. The first two programmes set basic pay increases and

[22]The apparent paradox between rigid wage setting agreements and low trade union membership in Spain, can be explained by government legislation in this area that is likely to have carried over from a previous era of corporatist planning

allowed for limited additional localised bargaining in the private sector to reflect the economic circumstances of firms. This clause generally resulted in wage increases above the target set. Real wages grew more slowly than productivity in the period 1987-90. However, there is no research evidence to suggest that the resulting wage increases were lower than they would have been in the absence of a centralised agreement. The complex negotiating procedures involved provided little scope for flexibility. The low target set in the first agreement meant that localised bargaining began with reduced expectations of wage increases. Special awards made to the public sector with the objective of restoring comparability with the private sector resulted in large public sector pay bills in the early 1990s. The recently negotiated *Programme for Competitiveness and Work* which will run from 1994-96 provides for pay increases at the expected rate of inflation, with freedom to undertake additional localised bargaining. A review of the agreement is provided for in the third year in the light of economic and social developments during the period.

4. The Periphery in Cross-Country Econometric Studies

We have described above some of the great diversity of labour market behaviour in the four main EU periphery countries and provided some heuristic explanations for how they deviate from the core and from each other. In attempting to explain this diversity, and the wider behaviour of unemployment in the EU during the 1980s, there is a strong temptation to seek out encompassing models that differentiate between the different member states only on the basis of parameter values within a common encompassing analytic-theoretic framework. For all their flaws and limitations, any insights that can be offered by such models into the causes and cures of unemployment are triply powerful, having intellectual coherence, parsimony and near universal applicability.

At the one extreme, such encompassing models can consist of a single reduced-form equation explaining unemployment, as in the seminal work of Layard, Nickell and Jackman (LNJ) (1991). At the other extreme, the encompassing framework can be a complex medium or large-scale structural macroeconometric model such as the European Commission's QUEST [Brandsma *et al.* (1991)] or the more recently developed HERMIN models of the periphery [Bradley, Herce and Modesto 1995]. However, in using such formalised model-based approaches, one must be satisfied that the models being used have sufficient scope and flexibility to deal with important country specific differences.

With a focus on a EU periphery consisting of Greece, Ireland, Portugal and Spain, we examine the insights yielded by existing econometric work.[23] In this section, we start with the LNJ (1991) approach, and examine the conclusions of this work in so far as they apply to the peripheral economies. We then look at the EU Commission's QUEST macroeconometric model and its labour market implications, once again from the point of view of the periphery. Finally, in the next section we describe some more recent work carried out by teams in the four periphery countries, involving HERMIN, a modelling approach that attempts to take into account some of the specific features of the economies involved to a greater extent than was possible within either the LNJ or QUEST exercises.

4.1 Layard, Nickell and Jackman (1991) on the periphery:

The most authoritative example of empirical work based on a one or two equation reduced-form approach is LNJ (1991). In chapter 11 of their book they address the question: "Why has unemployment differed between countries?", using a reduced form equation explaining movements in unemployment that includes both demand and supply side elements. Two of the EU periphery members are included in the international cross-section: Ireland and Spain. Unfortunately, Greece and Portugal are excluded, but we have seen above that the large agricultural labour forces and the basic nature of the social welfare system make the data on unemployment unreliable in these latter two countries.

The LNJ study aims at explaining two key stylised facts: the higher unemployment in every country in the 1980s compared to the 1960s; and the vastly higher EU unemployment compared with the better performance of the EFTA members, Japan, Oceania and North America. The model consists of two equations: a price equation (or, equivalently, a marginal revenue product condition, written as a dynamic employment equation) and a wage equation (or Phillips curve). Total employment is used (i.e., agriculture is included with non-agriculture; public with private), the price used is the aggregate deflator of GDP, but the wage is taken as the narrower measure of hourly earnings in manufacturing.

Solving their price and wage equations for the unemployment rate gives an explanation in terms of the following factors:

[23]Our comments have relevance for the labour market problems of Northern Ireland, which is part of the United Kingdom, but shares some of the characteristics of its Southern neighbour, the Republic of Ireland, and has many Mezzogiorno-like characteristics.

i. *real wage rigidity* - RWR (i.e., the extent to which wage pressure is converted into unemployment at constant inflation);

ii. *nominal wage rigidity* -NWR (i.e., the long-run inflation-unemployment trade-off, measured as the long-run cumulative unemployment cost of reducing inflation by one point);

iii.*hysteresis* - H (measured as the coefficient on lagged unemployment or as the mean lag on unemployment taking into account all dynamics).

Given that Ireland and Spain had the highest rise in unemployment during the 1980s, it is interesting to see how the LNJ approach accounts for this behaviour (LNJ, pp. 405-430). First, RWR is low in Ireland (0.27, similar to Belgium and France), but high in Spain (0.52, similar to Denmark, Germany and the UK). No clear pattern emerges for NWR. Hysteresis is all pervasive, in the EU and elsewhere, with Ireland's mean lag the highest within the EU. Finally, the effect of unemployment on wage and price setting in the underlying structural equations is atypical for Ireland, where the influence on price setting is bigger than for wage setting.[24]

The LNJ reduced form unemployment equation can be used to explain the changes in unemployment from the early 1970s to the mid 1980s in terms of:

i. The change in annual increase in inflation, and

ii. The size of the two oil shocks on each country (measured as the percentage rise in real import prices weighted by the share of imports)

The estimated reduced form equation is as follows:

$$\Delta u = 1.93 - 0.35(\text{NWR})\,\Delta(\Delta^2 p) + 1.90\,(\text{RWR})\,Shock + 11.59\,SP$$

For Ireland, Spain and Germany (for comparison), Table 4.1 below shows the decomposition of the rise in unemployment:

[24]The implied strong demand effects in Irish pricing behaviour are simply not credible and must cast doubt on the aggregate nature of the model specification for Ireland.

Table 4.1: Layard, Nickell and Jackman (1991), pp. 409: Change in unemployment: (1969-73) to (1980-85) and key explanatory factors

Δu (actual)	Inflation effect	World shock	Dummy	Constant
Ireland (6.9)	0.37	4.51	0.0	1.93
Spain (13.8)	0.49	0.69	11.6	1.93
Germany (5.1)	0.22	4.07	0.0	1.93

Hence this decomposition tells us nothing about the rise in Spanish unemployment (other than that it was associated with "the wage explosion that accompanied the end of the Franco era"), and attributes most of the Irish (and German) rise to the world "shock" variable. As a detailed taxonomy of the likely influences on unemployment, the LNJ study offers useful insights, but one is left with the impression, at least in the case of Ireland and Spain, that the level of aggregation is too great to get to the bottom of the complex processes of domestic institutional and structural change that these countries, together with the missing Greece and Portugal, were undergoing.

4.2 The European Commission's QUEST model on the periphery

The EU Commission's QUEST quarterly macroeconometric model is a unique source of econometric research findings that embraces all four of the peripheral countries within a common modelling framework, albeit one with a restriction to a two production sector model (public and private). An examination of its structure can give valuable insights into the likely behaviour of the individual periphery members, and a comparison with the core countries. In addition, the QUEST model was used in the Commission's *White Paper* to justify a reduction of employer's social security contributions as a desirable way of reducing unemployment [C.E.C. (1993a), pp. 140-142], making it necessary to evaluate the usefulness of the conclusions for the periphery.[25] In what follows we briefly review the key characteristics of the periphery as portrayed in QUEST, focusing on the labour and capital demand schedules, the price equation and the wage equation, and comment on some shocks evaluated with the model.

Although the long-run elasticities with respect to real GDP are constrained to unity in the QUEST labour demand schedules, the short-term elasticities can vary

[25]Neither of the two other models used in the *White Paper*, MIMIC (for the Netherlands) and the interlinked version of HERMES, include the periphery economies.

and the four periphery elasticities are very large (highest for Portugal (0.72), lowest for Ireland (0.40), but only 0.08 for Belgium). This finding is consistent with the stylised facts concerning core-periphery differences in production relationships examined in Section 2 above. The peripheral real wage cost elasticities are also much higher, both in the short and long run, with Ireland being the outlier on the low side.[26] Finally, the annual rate of labour-embodied technical change is highest for the four periphery countries, consistent with their rapid development and restructuring.[27]

With the exception of Ireland, the periphery does not stand out quite so dramatically in terms of demand for capital equipment. Ireland shows a very large sensitivity to changes in final demand, and a high elasticity with respect to profitability (measured as the share of gross operating surplus in GDP). Portugal has the second highest elasticity, at 1.95, while Spain and Greece are fifth (at 0.76) and seventh (0.61), respectively. A possible explanation of this diversity goes to the heart of how small, open, developing economies can have an important supply-side link to core developed economies through foreign direct investment by multinational companies [Bradley and Fitz Gerald (1988)].

The wage-price determination in QUEST has many similarities to the LNJ (1991) approach. The deflator of GDP is determined by wage costs, demand and competitive conditions, in an equation of the form:

$$\dot{p} = a_0 + a_1 \dot{wc} + a_2 \dot{upro} + a_3 \dot{uc} + a_4 [\dot{pm} - L(\dot{pm})] + erc$$

where

p = product price
wc = nominal wage
uc = capacity utilisation rate
upro = labour productivity
pm = import price
erc = error correction mechanism

[26]The explanation for the low wage cost elasticity in the Irish case is probably associated with the high share of employment in multinational enterprises, for which factor proportions are largely determined in the country of origin [Bradley and Fitz Gerald (1988)].

[27]These high rates on technical change in the periphery imply high employment thresholds (using the White Paper terminology, pp. 43). This means that output must grow at above 3% per year before employment can begin to increase.

Although the long-run wage-cost elasticity is constrained to unity (other than for Ireland), the short-run elasticities for the periphery members are grouped close together at the high end of the scale. Prices are relatively insensitive to capacity utilisation (other than Greece), and the short run influence of labour productivity is quite large for the periphery as a group (and Belgium). Import prices (a proxy for competitive conditions) are constrained to have only a temporary influence on the mark-up producer price model, the permanent effect being assumed to pass through consumer prices.

Turning finally to the wage equation, the standard bargaining model (or augmented Phillips curve) approach is used:

$$\dot{wr} = a_0 + a_1 \dot{pc} + a_2 (\dot{pc} - \dot{p}) + a_3 \dot{upro} + a_4 \dot{lur} + a_4 \Delta lur$$

where

wr = nominal wage
pc = consumption price
p = value-added price (used to define the "terms-of-trade" effect $\dot{pc} = \dot{p}$
upro= labour productivity
lur = unemployment rate

The periphery members differ slightly with respect to the degree of short-run indexation to the consumption deflator (nearly full indexation for Spain and Portugal; about half that for Greece and Ireland), but are constrained to full (or almost full) indexation in the long run.[28] In the Phillips curve (or unemployment effect), wage inflation in Portugal is by far the most sensitive to movements in unemployment (a_4= -1.95, nearly twice as high as the next nearest (Japan, at -1.17), and nearly six times higher than the nearest periphery country (Ireland, at -0.35).

The terms-of-trade effect is almost unity for Greece, Portugal and Spain, but is very small (-0.14) for Ireland, a puzzling finding in light of the extreme openness of the Irish economy (Table 6.2 in Brandsma *et al.* (1991) shows Belgium, Ireland and the Netherlands to be the most open EU economies). The positive productivity term in the wage equation is constrained to be equal to the size of the negative productivity term in the producer price equation, and hence is not a cause of inflation.

[28]The consumption deflator is determined as a weighted average of the producer price (p) and the import price (pm), where the import price weight is related to the import share in GDP.

The consequences of the above key equations in QUEST can be illustrated by subjecting the four periphery models to a public investment shock equal to 1% of baseline GDP. The results are shown in Figure 4.1 (a)-(c).

At one extreme, the Irish response is for a sustained rise in real GDP of 0.8%, a modest increase in wage inflation (rising to 0.7%) and a sustained reduction in the unemployment rate of 0.2 percentage points relative to the baseline. At the other extreme, the short term increase in Portuguese real GDP of 0.8 is quickly reduced to zero, there is a large rise in wage rates of nearly 3.5%, and unemployment rises by 0.2 percentage points relative to the baseline. Greece and Spain are intermediate cases.

If these results were to be taken literally, then CSF-type policies would be relatively ineffective in the Southern periphery in promoting sustained higher growth. In fact the QUEST simulations ignore key supply-side responses that would be associated with improvements in public infrastructure and human resources, and focus on the more Keynesian demand-side effects. A better treatment of these supply-side responses would seem to require a more disaggregated approach to modelling of the peripheral economies. The HERMIN modelling network grew out of this need, and is described in the next section.

Figure 4.1(a):

Unlinked QUEST Simulation: 1% of GDP Public Investment: Effect on Real GDP

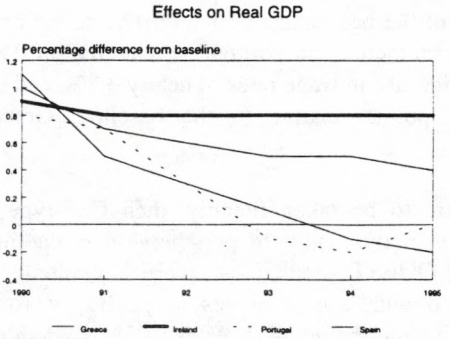


Figure 4.1(b):

Unlinked QUEST Simulation: 1% of GDP Public Investment: Effect on Nominal Wage Rate

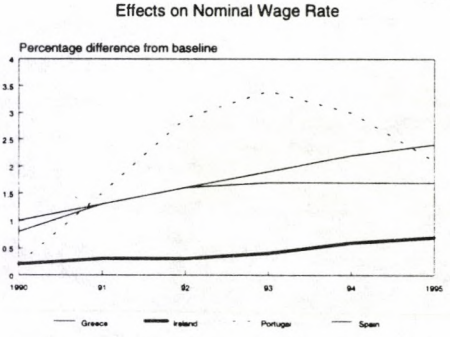
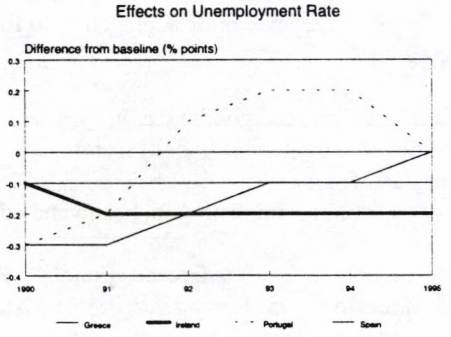


Figure 4.1(c):

Unlinked QUEST Simulation: 1% of GDP Public Investment: Effect on Unemployment Rate



5. Sectoral and Development Issues: The Hermin Model

The LNJ (1991) approach is essentially a single sector reduced form analysis of the labour market. The QUEST econometric model extends this to a structural model, and focuses on the private sector. A recent peripheral modelling project, the HERMIN model, extends the level of disaggregation to four sectors [Bradley, Herce and Modesto, 1995]:

i. A manufacturing (or largely traded goods) sector
ii. A services and utilities (or largely non-traded) sector
iii.Agriculture, forestry and fishing
iv.The non-market sector (public administration, health and education)

Complete HERMIN models exist for Greece, Ireland, Portugal and Spain (Bradley, Herce and Modesto, 1995; Barry *et al*, 1996). Extensive use has been made of the Irish model to study the causes of the rapid rise in Irish unemployment between 1980 and 1986 [Barry and Bradley (1991)], with findings that contrast with those of LNJ (1991) and with Newell and Symons (1990), which was in the LNJ tradition. Basically, domestic policy mistakes are found to play a much more important role in accounting for the rise in Irish unemployment during the 1980s than that assigned to them by the LNJ approach. In addition, the HERMIN models have recently been used to study the impact of the Single Market on the periphery, in the context of the Community Support Framework of regional investment aid (Barry *et al*, 1996).

Crucial to the HERMIN approach is the three-way disaggregation of private sector production, into manufacturing, market services and agriculture. Ideally one would have liked to model the disaggregation of the non-agricultural sector into traded and non-traded activities, but this was not possible with existing data sources. Clearly the process on opening to the world economy, advanced in Ireland's case, but less so for the Southern periphery, is forcing change initially in the traded sector. Inefficient industries, previously protected by tariff and non-tariff barriers, are in decline and are being replaced by a mixture of multinational branch plants and by more efficient indigenous firms. Consequently, the ability to pass through domestic cost inflation to producer prices is declining in the traded sector, and, based on Ireland's experience, will eventually vanish completely. In addition, the production technology will move progressively from a Cobb-Douglas type, where the blue-print is responsive to domestic relative factor prices, to a more Leontief type, where the blue-print is designed abroad. Such considerations as these were at the centre of the exploration of the impacts of the Single Market on the periphery (Barry *et al*, 1996).

In addition, the market service sector is undergoing a transition, initially providing consumer services, but gradually changing to a greater provision of producer services, the containment of whose costs is a crucial element in the competitive success of the exposed traded sector.

Finally, the HERMIN models provide a bridge between macro-stabilisation and macro-growth analysis. This permits one to investigate the supply-side consequences of policy initiatives like the CSF, that were largely ignored in the QUEST analysis described above. Results for Ireland illustrate the beneficial consequences on infrastructural and human resource shocks that occur as externalities, and produce permanent benefits to the periphery [Bradley, Whelan and Wright (1993)].

We now provide a summary overview of the structure and properties of the four HERMIN models of Greece, Ireland, Portugal and Spain, focusing on similarities and differences between the structures of the various peripheral countries. Our summary is brief, since more detailed descriptions of earlier versions of three of the models are available elsewhere (Bradley, Herce and Modesto, 1995).[29]

5.1 The HERMIN models: an overview

Each national HERMIN model consists of three broad subcomponents: a supply-side, an absorption side and an income distribution side. Obviously, the models function as integrated systems of equations, with interrelationships between all their subcomponents. However, for expositional purposes we describe the HERMIN modelling framework in terms of the above three subcomponents, which are schematically illustrated in Figure 5.1 below.

Conventional Keynesian mechanisms are at the core of the HERMIN model. Thus, the absorption and income distribution subcomponents (shown in Figure 5.1) generate the standard income-expenditure mechanisms of the model. However, the model also has neo-classical features, mainly associated with the supply subcomponent (illustrated in Figure 5.1). Thus, output in manufacturing is not simply driven by demand. It is also influenced by price and cost competitiveness, where firms seek out minimum cost locations for production (Bradley and Fitz Gerald, 1988). In addition, factor demands in manufacturing and market services are derived using a CES production function, where the capital/labour ratio is sensitive to relative factor prices. The incorporation of a structural Phillips curve mechanism in the wage bargaining mechanism introduces

[29]The HERMIN model for Greece was newly constructed by the Irish team, in conjunction with the Greek consultant and is described in this section for the first time.

further relative price effects. Finally, in the Irish model labour migration is sensitive to relative labour market conditions in Ireland and Britain.

5.2 The supply block of HERMIN

Basically this block concerns the determination of output, factor inputs, output prices and factor prices for the four-way sectoral disaggregation of GDP into manufacturing (T), market services (N), agriculture (A) and government (G).

Manufacturing sector

Manufacturing output (OT)

A standard form of manufacturing output equation (OT) is specified for each of the four models. This takes the form

$$\log(OT) = a_1 + a_2 \log(OW) + a_3 \log(ULCT / POT) + a_4 \log(FDOT) + a_5 \log(POT / PWORLD) + a_6 t$$

where OW is 'world' manufacturing output, ULCT is unit labour costs, POT is the output price, FDOT is a measure of domestic demand weighted by manufacturing output content (derived from the I-O table), and PWORLD is the world manufacturing price.

Figure 5.1: The HERMIN Model Schematic

Supply Aspects

Manufacturing Sector

Output = f_1(World Demand, Domestic Demand, Competitiveness, t)
Employment = f_2(Output, Relative Factor Prices, t)
Investment = f_3(Output, Relative Factor Prices, t)
Capital Stock = Investment + (1-δ) Capital Stock$_{t-1}$
*Output Price = f_4(World Price * Exchange Rate, Unit Labour Costs)*
Wage Rate = f_5(Output Price, Tax Wedge, Unemployment, Productivity)
Competitiveness = National/World Relative Production Cost and Prices

Service Sector

Output = f_7(Weighted Domestic Demand, World Demand)
Employment = f_8(Output, Relative Factor Prices, t)
Investment = f_9(Output, Relative Factor Prices, t)
Capital Stock = Investment + (1-δ)Capital Stock$_{t-1}$
Output Price = Mark-Up On Labour Costs
Wage Inflation = Manufacturing Sector Wage Inflation

Demographics and Labour Supply

Population Growth = f_{11}(Natural Growth, Migration) --- (Ireland)
Migration = f_{12}(National/EU Labour Market Conditions) -- (Ireland)
Labour Supply = f_{13}(Population, Replacement Ratio, Unemployment)
Unemployment = Labour Supply - Labour Demand

Absorption Aspects

Consumption = f_{14}(Personal Disposable Income)
Net Trade Surplus = Output - Domestic Demand

Income Distribution

Income = Output
Personal Disposable Income = Income + Transfers - Direct Taxes
Balance of Payments = Net Trade Surplus + Net Factor Income From Abroad
*Public Sector Borrowing = Public Expenditure - Tax Rate * Tax Base*
Public Sector Debt = (1 + Interest Rate) Debt$_{t-1}$ + Borrowing

Key Exogenous Variables

External: World output and prices; EU core labour market conditions; exchange rates; interest rates.

Domestic: Public expenditure; tax rates

In estimation the Irish and Spanish models appear as polar opposites. The small size and extreme openness of the Irish economy, and the dominant position occupied by branch plants of foreign-owned multinational firms, dictate a particular form of manufacturing output determination, with consequences for the behaviour of manufactured exports. Domestic demand is found to play a relatively small part in the long-run decisions of Irish manufacturing firms, and output prices are almost completely determined abroad. Irish manufacturing output is driven primarily by world demand and cost competitiveness.

In the Spanish HERMIN model, on the other hand, manufactured output responds strongly to changes in both domestic demand and world demand conditions. Spanish prices are also more strongly affected by domestic costs, in contrast to the strong degree of externally determined pricing behaviour found for Irish manufacturing.

In Table 5.1 we show the estimated and imposed coefficients in the manufactured output equation for all four models. In estimation we impose certain restrictions on the relative size of the coefficients a_2 and a_4 (i.e., on the relative strengths of the world and domestic demand variables).[30]

Table 5.1: Coefficients on the OT equation

	Greece	Ireland	Portugal	Spain
a_2	0.25*	0.51	0.37	0.18
a_3	-0.25*	-0.31	-0.25*	-0.20*
a_4	0.50*	0.26	0.74	0.54
a_5	-0.25*	-0.34	-0.25*	-0.20*
a_6	0.0096	0.036	-0.001	0.0095

*denotes imposed coefficient.
Source: Own estimates

[30]Thus, we make the strong assumption that goods sold on the home market can be identified as non-tradables. This was done because for several of the countries the ratio (for the manufacturing sector) of goods exported to sales on the home market is very close to the weight of world demand in the manufacturing output equation relative to domestic demand (a ratio of around 2 to 1 for Ireland). Goods exclusively dependent on domestic demand are by definition non-tradable.

Factor demands in manufacturing (LT, IT)

Since the Cobb-Douglas production function is too restrictive, we use the CES form of the added value production function and impose it on both manufacturing (T) and market service (N) sectors:

$$Q = A\left[\delta\left\{\exp(\lambda_L t)L\right\}^{-\rho} + (1-\delta)\left\{\exp(\lambda_L t)K\right\}^{-\rho}\right]^{-\frac{1}{\rho}}$$

In this equation, Q, L and K are added value, employment and the capital stock, respectively, A is a scale parameter, ρ is related to the constant elasticity of substitution, δ is a factor intensity parameter, and λ_L, λ_k are the rates of technical progress embodied in labour and capital respectively.

In both the manufacturing and market service sectors, factor demands are derived on the basis of cost minimisation subject to given output, yielding a joint factor demand equation system of the form:[31]

$$K = g_1\left(\left(Q, \frac{c}{w}\right)\right)$$

$$L = g_2\left(\left(Q, \frac{c}{w}\right)\right)$$

Here, w and c are the cost of labour and capital, respectively. Simple autoregressive expectational lags can be imposed by making actual factor demands a function of lagged values of the driving variables.

Although the central factor demand systems in the manufacturing and market service sectors are functionally identical, together with their ancillary identities, they will have different estimated parameter values and other crucial differences. For example, in the Irish case a fraction of manufacturing sector profits is repatriated through the balance of payments, mirroring the known behaviour of multinational firms that dominate the Irish manufacturing sector. This profit repatriation mechanism is not yet included in the Greek, Portuguese and Spanish models, where the role of multinationals is considerably smaller as a share of total manufacturing activity. No such mechanism is included in the market service sector, where distributed profits simply go directly into private income.

[31] A profit maximisation approach, used in a earlier version of the Portuguese model, leads to essentially the same empirical formulation of factor demands, although has different implications for output determination. In all models we have standardised on the cost minimization approach.

Focusing first on production functions, we summarise below the elasticities of substitution between capital and labour in the manufacturing sector. The main finding (shown in Table 5.2) that comes through is the fact that the Irish elasticity

Table 5.2: Elasticities of substitution in manufacturing sector production functions

Ireland	Portugal (and Greece)	Spain
0.34	0.88	0.77

Source: Own estimates

is much smaller than those for Portugal and Spain.[32]

The smaller elasticity for Ireland can be understood as follows. In a traditional and/or relatively closed economy, the substitution of capital for labour as a result of shifting relative factor prices normally takes place within the economy. However, in an economy dominated by multinationals, this substitution will often involve a shift in production capacity to other countries (i.e. capital will not replace labour in the Irish factory but will instead seek out lower costs elsewhere). Due to difficulties with the Greek estimation, we have imposed the Portuguese elasticity of substitution, but estimated the other CES parameters freely from the data.

A note on the role that the production function plays in the model is necessary. Macroeconometric models can feature production functions of the form:

$$Q = f(K,L)$$

without output being determined by this relationship. We have seen above that manufacturing output is determined in HERMIN by a mixture of world and domestic demand, together with price and cost competitiveness terms. Having determined output in this way, the role of the CES production function is to constrain the determination of factor demands in the process of cost minimisation that is assumed. Hence, given Q (determined however), and given (exogenous) relative factor prices, the factor inputs, L and K, are determined by the CES constraint. Hence, the production function operates in the model as a technology constraint and is only indirectly involved in the determination of output. In later chapters we will see that it is partially through these interrelated factor demands that the longer run efficiency enhancing effects of the SEM and the CSF are held to operate.

[32]The volume of output is held constant in determining the values of these elasticities.

The price of manufacturing output (POT)

Output prices in the manufacturing sector are determined as a mixture of price taking (PWORLD) and a mark-up on unit labour costs (ULCT).

$$\log(POT) = a_1 + a_2 \log(PWORLD) + (1 - a_2) \log(ULCT)$$

Ireland stands out as a more extreme case of price-taking, with an elasticity of 0.80 on PWORLD. Greece has a value of 0.70 and Portugal 0.62. Spain is lowest, with a value of 0.41. In every case price homogeneity was imposed, ensuring that the mark-up elasticity was one minus the price-taking elasticity.

Average annual earnings in manufacturing (WT)

The behaviour of the industrial sector tends to be dominant in the area of wage determination. Wage rates are modelled as the outcome of a bargaining process that takes place between well-organised trades unions and employers, with the frequent intervention of the government. Formalised theory of wage bargaining points to four paramount explanatory variables (Layard, Nickell and Jackman , 1990):

i. Output prices (POT)
ii. The tax wedge (WEDGE)
iii. The rate of unemployment (UR)
iv. Labour productivity (LPRT)

The form of manufacturing wage equation estimated for the Irish and Spanish models is as follows:

$$\log(WT) = a_1 + a_2 \log(POT) + a_3 \log(WEDGE) + a_4 \log(LPRT) + a_5 UR$$

This equation could also be written in rate-of-change form, and the issue of hysteresis explored through using the level and change in UR in the Phillips curve term. Wages in the Greek and Portuguese models are determined in a slightly simpler way and use the consumption deflator (incorporating only an indirect tax wedge), as follows:

$$\log(WT) = a_1 + a_2 \log(PC) + a_3 \log(LPRT) + a_4 UR$$

In all cases we imposed full price indexation, which was not rejected by the data in the case of Ireland and Portugal. In the case of Spain we believed that anything less than full price indexation would complicate the interpretation of the long-run simulation analysis that is required for SEM and CSF investigations. While international studies show dramatic differences in the pass-through of

productivity, they tend to show full indexation to prices in the long run (Dreze and Bean, 1990). We failed to estimate sensible equations for wage setting in Greek manufacturing and were forced to impose the following properties: full indexation to consumer prices; full pass-through of labour productivity; and a Phillips curve effect that is the same as in the case of Portugal.

It is in the impact of unemployment on wage demands (the 'Phillips Curve' effect) that the four wage equations differ most. We show below in Table 5.3, the effects on the wage rate of a one percentage point rise in the rate of unemployment. It is clear that wage bargaining in the manufacturing sector is least influenced by the level of unemployment in the Spanish case. The Phillips curve parameters are very similar in the cases of Greece, Ireland and Portugal. However, the labour supply in HERMIN is exogenous in the cases of Greece and Portugal. Hence, deviations of unemployment from a baseline can only be removed through changes in the demand for labour. For Ireland, on the other hand, the labour supply is highly elastic, due to the presence of an unemployment-sensitive migration mechanism in the Irish model. This will serve to drive any deviations of the Irish unemployment rate to zero in the medium term, as the British-Irish equilibrium is re-established. Hence, the long-run effective role of the Phillips curve mechanism is very diminished in the Irish model.

Table 5.3: Phillips curve effects[a]

	Manufacturing
Ireland	-0.021
Portugal	-0.022
Greece	-0.025
Spain	-0.0054

[a]Percentage change in wages resulting from 1 percentage point rise in unemployment
Source: Own estimations

Market services

Output in market services (ON)

Once again, a standard form of the service sector output equation (ON) is specified for all four models. Initially this was in double log form:

$$\log(ON) = a_1 + a_2 \log(IH + IBC) + a_3 \log(FDON) + a_4 \log(OW) + a_5 t$$

where IH is housing investment, IBC is other building and construction investment, FON is a measure of domestic demand weighted of services output content and OW is world manufacturing. We separate out the building and construction investment from the other components of domestic demand since this element has a large weight in determining output in the service sector (remember, building and construction activity is included in the market services sector (N)).

Factor demands in market services (LN, IN)

A CES production function is also used in the market service (or N-sector) for each model. We summarise below the elasticities of substitution between capital and labour in the market service sector. The main finding that comes through is the fact that the Irish elasticity is much smaller than those for Portugal and Spain.[33]

Table 5.4: Elasticities of substitution in market services production functions

Ireland	Greece and Portugal	Spain
0.20	0.70	0.51

Source: Own estimations

Market services output price (PON)

Market services output prices (PON) are determined as a mark-up on unit labour costs (ULCN) in all four models. However, in Portugal, there is a small world price-taking element, with an elasticity less than 0.20.

Average annual earnings in market services (WN)

Visual inspection indicated that the sectoral wage inflation rates in manufacturing and market services were almost identical. So we invoke labour market homogeneity, as in the Scandinavian model of Lindbeck, 1979, and pass on the manufacturing-sector wage inflation to the market service and government sectors. This assumption seems to fit all countries reasonably well, even if it is a gross simplification of the real world situation.

[33] The volume of output is held constant in determining the values of these elasticities.

Agriculture

The agriculture sector is treated exogenously in all four models. Basically, output (OA), employment (LA), and the capital stock (KA) are modelled as time trends. Output prices are exogenously determined within the Common Agricultural Policy (CAP).

Government sector: output and employment

Public sector employment and investment are exogenous instruments. GDP arising in the public sector is set equal to the real and nominal wage bill, plus a real and nominal non-wage residual. Further details of taxation and expenditure are given in Barry *et al* 1996.

Labour supply

In the case of Ireland, the supply of labour by households is modelled carefully in order to take into account the known open properties of the Irish labour market. Population of working age is driven by an exogenous 'natural' growth rate, modified by migration outflows and inflows. The participation rate is influenced by unemployment (the discouraged worker effect) and the replacement ratio (i.e., the fraction of average earnings replaced by social welfare transfers) (Newell and Symons, 1990). International migration is driven by relative expected earnings and employment probabilities between Ireland and Britain (Walsh, 1974).

Unfortunately, estimation of the crucial migration relationship is not very robust, due to the poor quality of the inter-censal estimated data on new migration flows. However, the migration mechanism in the Irish model is quite unique among macroeconometric models in the EU, and, for example, no other European macromodel treats migration endogenously. The performance of the Irish labour market is crucially dependent on the migration outlet as a means of providing employment for excess Irish population in world (mainly British) labour markets.

With respect to labour supply, the Irish and Greek/Portuguese models are also polar extremes, with the labour supply exogenous in the Portuguese and Greek models and both endogenous and highly elastic (because of the migration links between Ireland and the UK) in the Irish case. The Spanish model permits some endogeneity to enter via discouraged worker effects in the male and female labour force participation decisions. Consequently, in the Portuguese and Greek models there is a one-to-one relationship between employment and unemployment: at the margin, a job created means one less unemployed person. Once again however, one could argue that the Portuguese model may become more similar to the Irish case as the Portuguese labour market integrates with labour markets in the European core economies. Alternatively, the labour supply may already be quite elastic due to internal migration (e.g., of the classic Harris-Todaro rural-urban

kind). This obviously is an area where further research is needed, given the importance of the Phillips curve effects in all the HERMIN model simulations.

5.3 The absorption block of HERMIN

Private consumption

In the standard version of HERMIN, the determination of household consumption is quite simple and orthodox. Private consumption is related to real personal disposable income. In practice consumers in the periphery are found to be mainly liquidity constrained, a fact that is not surprising in light of the less sophisticated financial sectors in these countries.[34]

The estimation results for the simple liquidity constrained consumption functions were as follows:

Table 5.5: Long run marginal propensity to consume

	Greece	Ireland	Portugal	Spain
MPC	0.790	0.800	0.826	0.882

Source: own estimations

Net trade surplus

Drawing on the theory on regional and small open economy macromodels, exports and imports are not modelled separately in the HERMIN models. Rather, the net trade surplus, in current and constant prices, is determined as a residual by subtracting domestic demand from output. Thus, in current prices,

$$NTSV = GDPMV - (CONSV + GV + IV + DSV)$$

and in constant prices,

$$NTS = GDPM - (CONS + G + I + DS)$$

[34]We experimented with a hybrid liquidity constrained and permanent income models of consumption, using the Irish model as a test case, and found that the properties of the model were relatively invariant to the choice between a hybrid and a pure liquidity constrained function. Of course, if a forward looking model of wage income were used, the properties of the model would change radically (Bradley and Whelan, 1996).

where GDPM(V) denotes GDP at constant (current) market prices; CONS(V) is private consumption, G(V) is public consumption, I(V) is investment, and DS(V) are inventory changes.
Hence, the HERMIN models can say nothing about the separate behaviour of exports and imports. Only the impact on the net trade surplus can be examined.

5.4 The income distribution block of HERMIN

With a view to subsequent policy analysis, HERMIN includes a moderate degree of institutional detail in the public sector along conventional lines. Within total public expenditure we distinguish public consumption (mainly wages of public sector employees), transfers (social welfare, subsidies, debt interest payments), and capital expenditure (public housing, infrastructure, investment grants to industry).

At present, there is effectively no monetary sector in HERMIN, so both the exchange rate and domestic interest rates are treated as exogenous. Thus, the nominal 'anchor' in each model is the world price in foreign currency. In effect, by treating exchange rates and interest rates as exogenous in Greece, Portugal and Spain we are positing a future process of EMU-type financial integration rather than modelling their actual past behaviour.

5.5 How the models react to exogenous shocks

In all four models an attempt has been made to carry out comparable shocks to observe how each model reacts. We briefly review the responses of each model to two shocks that serve to illustrate certain mechanisms that are central to the subsequent analysis of the SEM and the CSF (see Bradley *et* al, 1995 and Barry *et al*, 1996 for further material on shocks). These shocks originate from the year 1990, and are carried out against the background of a baseline projection that runs from 1987 to 2010. The baseline is not intended to be a formal forecast of the likely evolution of these four economies. Rather, it is a conjectural projection that has reasonably stable properties (i.e. stable public debt/GDP ratio, stable or declining rate of unemployment, etc.). In effect the models are reasonably linear in behaviour, so the magnitudes of partial derivatives with respect to exogenous variables are relatively invariant to the actual level of the baseline.

The two shocks we present relate to the influence of world demand and public sector employment. The response of each model to a stimulus in world activity (specifically, to world manufacturing output, OW) is important when analysing the impact on the periphery of growth in the rest of the EU. The shock to public

sector employment (LG) permits the evaluation of standard fiscal multipliers both in the case of debt financing and in the case of tax financing.

The impact of world manufacturing activity (OW)

The results are shown in Table 5.6. The Irish results stand out in this table in that the manufacturing sector responds strongly to the world demand boost. This arises from the form of the manufacturing output equation, where there is a higher elasticity with respect to OW than is the case in the other three models. The least responsive models are the Greek and Spanish, where once again this is merely reflecting the characteristics of the country coefficients of the manufacturing output equation. Since domestic demand plays a greater role in the Southern periphery models, the service sector responds relatively more strongly than in the Irish case to secondary effects of a rise in manufacturing output. In addition, the direct impact of changes in OW is greatest in the case of Greece (i.e., the elasticity of ON with respect to OW is largest), and smallest in the case of Ireland.

Table 5.6: World demand shock: 1% of 1989 figure[1]

Year	1990	1991	1995	2000	2010
Greece					
% dif. in OT	0.26	0.23	0.25	0.24	0.24
% dif. in ON	0.34	0.40	0.48	0.52	0.59
% dif. in GDPFC	0.21	0.24	0.29	0.31	0.37
Ireland					
% dif. in OT	0.49 (0.50)	0.46 (0.47)	0.49 (0.52)	0.52 (0.58)	0.55 (0.63)
% dif. in ON	0.23 (0.23)	0.28 (0.28)	0.28 (0.31)	0.31 (0.35)	0.37 (0.43)
% dif. in GDPFC	0.26 (0.26)	0.27 (0.28)	0.30 (0.32)	0.33 (0.37)	0.39 (0.44)
Portugal					
% dif. in OT	0.37	0.36	0.42	0.44	0.48
% dif. in ON	0.19	0.25	0.33	0.40	0.52
% dif. in GDPFC	0.18	0.20	0.25	0.28	0.34
Spain					
% dif. in OT	0.22 (0.23)	0.25 (0.27)	0.24 (0.34)	0.25 (0.43)	0.26 (0.50)
% dif. in ON	0.17 (0.18)	0.22 (0.23)	0.22 (0.29)	0.25 (0.38)	0.32 (0.48)
% dif. in GDPFC	0.15 (0.16)	0.19 (0.20)	0.19 (0.25)	0.20 (0.32)	0.25 (0.40)

[1] all differences are from national baseline scenario

Legend: OT — Output in the traded sector (constant prices)

ON — Output in the non traded sector (constant prices)

GDPFC — Gross domestic product at factor cost (constant prices)

Note: Numbers in brackets indicate simulations where the fiscal policy rule (to target RDEBT) was switched on (refer to Section 5.3)

The impact of an increase in government employment (LG)

The results are shown in Table 5.7. In each case we have permanently raised public employment numbers by 5% of their 1989 baseline value. Table 5.7 shows both the case where no attempt is made to finance the increased public expenditure by raising taxes and the case where a policy feed-back rule is used to attempt to prevent deviations in the national debt to GDP ratio from its baseline values.[35]

[35]The policy feedback rule endogenises the direct tax rate and uses it to reduce deviations in public debt from its baseline path.

We calculate a multiplier by taking the ratio of the rise in real GDP (relative to the baseline) to the increase in public consumption (in real terms, relative to the baseline). For all four models the long run fiscal multipliers are quite high in the policy unconstrained case, ranging from about 1.5 for Ireland to about 2 for Greece. In this case, for Greece, Ireland and Portugal it is seen that there is a serious deterioration in the fiscal position (i.e. a rise of about ten percentage points in the debt/GDP ratio).

Table 5.7: Public sector employment shock: 5% of 1989 figure[1]

Year	1990	1991	1995	2000	2010
Greece					
Multiplier	1.12 (1.51)	1.32 (1.88)	1.72 (1.78)	1.79 (0.48)	1.96 (-1.14)
dif. in RDEBT	-0.65 (-0.37)	-1.35 (-0.97)	-0.10 (1.06)	3.34 (3.75)	10.43 (0.55)
Ireland					
Multiplier	1.18 (1.10)	1.41 (1.24)	1.40 (0.86)	1.43 (0.46)	1.50 (0.08)
dif. in RDEBT	-1.19 (-1.27)	-1.40 (-1.65)	1.56 (0.06)	4.72 (0.57)	9.90 (-0.58)
Portugal					
Multiplier	1.02 (0.96)	1.22 (1.05)	1.55 (0.94)	1.64 (0.68)	1.91 (0.75)
dif. in RDEBT	-0.06 (-0.31)	0.14 (-0.21)	2.72 (2.11)	5.97 (2.61)	11.44 (2.76)
Spain					
Multiplier	1.27 (1.14)	1.66 (1.39)	1.51 (0.85)	1.52 (0.50)	1.53 (0.42)
dif. in RDEBT	-0.13 (-0.20)	-0.08 (-0.32)	0.67 (-0.53)	1.73 (-1.17)	4.15 (-2.26)

[1] all differences are from national baseline scenario

Legend: The multiplier is calculated as dif(GDPE)/dif(G) where differences are taken relative to the no-shock baseline. GDPE is gross domestic expenditure (at constant prices) and G is public consumption (at constant prices)

Note: Numbers in brackets indicate simulations where the fiscal policy rule (to target RDEBT) was switched on (refer to Section 5.3)

In the policy constrained case, shown in brackets in Table 5.7, the policy feed-back rule is endogenised to attempt to moderate the rise in the debt/GDP ratio over its baseline. The rule is not perfect, but it is reasonably successful in controlling deviations in the debt/GDP ratio. The fiscal multipliers are drastically reduced in the policy constrained (semi balanced budget) case. The reduction is

greatest in the case of Greece, where they become negative towards the end of the simulation period. In the case of Ireland the multiplier falls eventually to zero, indicating that the balanced budget multiplier is zero in the medium to long term.

5.6 Overall perspective on the HERMIN models

In the Irish case the HERMIN model reflects an economy whose manufacturing sector reacts rather rapidly to movements in world demand, indicating the close supply-side links with foreign multinational activity. The somewhat limited role for domestic fiscal expansion is reflected in the fiscal multipliers, which are effectively zero in the balanced budget case when the national debt is capped.

In the Greek and Portuguese cases the HERMIN model reflects economies that are only partially exposed to international competition. Increases in world demand bring only limited increases in domestic production, reflecting the more traditional nature of their exports and the predominance of imports of finished goods. The fiscal multipliers also appear to be relatively large, though they probably characterise an era that has now passed, when Portugal and Greece were relatively insulated from world economic forces. We suspect that both these economies may become much more like the Irish case in future years.

The Spanish results are interesting. Our prior was that Spain would behave as a semi-closed economy, given its large size relative to Greece, Ireland and Portugal. This is partially borne out in the world output shock. However, the fiscal multipliers were found to be rather smaller than expected. The institutional rigidities of the labour market, captured in a stylised way by the very small Phillips curve parameter in the wage bargaining equation, appear to be responsible for this, but the matter clearly merits further research and investigation[36].

6. The White Paper and Peripheral Development

We turn now to the longer-term developmental policy aspects of the White Paper. These have been succinctly summarised in terms of the following four overriding objectives (pp. 58-59):

i. helping European firms to adapt to the new globalised and interdependent competitive situation

[36]In Spain, collective bargaining agreements are legally enforcable and apply to all workers whether or not they are unionised.

ii. exploiting the competitive advantages associated with the gradual shift to a knowledge-based economy
iii. promoting a sustainable development of industry, and
iv. reducing the time-lag between the pace of change in supply and the corresponding adjustments in demand.

In each case there is a specifically peripheral perspective on these issues. We first treat the industrialisation and competitiveness aspects, examining the different states of evolution of, and choices facing, the four countries involved. Then we discuss how policies of investment in human resources and physical infrastructure are central to the process of development in the periphery, promoting greater integration into the EU and wider world economies.

6.1 Industrialisation and competitiveness

The proposal in the White Paper is to keep average real wage increases 1 percentage point below the growth rate of productivity. It is well established that while the European economies tend to pass on almost all productivity increases to labour in the form of higher wages, measured productivity does not enter significantly in the U.S. wage equation [Dreze and Bean (1990)]. Consequently, the White Paper proposal would represent a modification of earlier practice in the EU, and would facilitate greater employment growth.

This pay guideline would be far too lax under the circumstances facing the periphery, for the following reason. Given the likelihood that productivity will continue to grow much faster in these countries, the guideline would be compatible with a substantially faster growth of real wage rates there than in the EU core.[37] The resulting impact on employment overall would be unfavourable, however, because the pace of average productivity growth masks very different productivity performance across sectors.

For example, in Ireland productivity growth has come to be dominated by multinational enterprises with such high productivity levels and growth rates that the indigenous employment-intensive firms, which account for the bulk of total employment, could not hope to match them. For this reason, as well as the greater scale of the employment challenge facing the periphery, a more restrictive pay target would be needed to achieve the employment effects expected in other EU countries from the adoption of the Commissions guideline.

[37]In Section 5 we drew attention to the high rate of technical progress in the periphery, with obvious consequences for productivity growth.

This crowding-out process in Ireland can be regarded as a variant of the Dutch disease, from which Spain also has suffered. Both countries have experienced a considerable amount of restructuring and modernisation of activity which, because it was unevenly spread and concentrated primarily in less labour-intensive activities, led to a pricing out of low-productivity, labour-intensive activities [Bradley, Whelan and Wright (1993), pp. 41-43]. That Greece and Portugal have not experienced a similar situation may be a consequence of their low state of development, rather than that they have found satisfactory ways of dealing with the negative spill-overs of rapid modernisation. These problems, therefore, are still before them.

Policy makers in the Southern periphery face the following stark choice. Do they permit the fairly rapid destruction of their indigenous, inefficient, labour intensive, low wage sector, and facilitate its replacement by an efficient, capital (or R&D) intensive, high wage sector? As in the Irish and Spanish cases, this route appears likely to entail substantial structural unemployment and an associated high tax burden if social welfare systems are put in place. Alternatively, do the policy makers permit a dual labour market to develop, where, in the absence of a fully developed social welfare system, workers in the low productivity sectors have no choice but to accept low wages.[38] In the Greek and Portuguese cases, this second route appears to entail a wide dispersion of wage rates, as between sectors and skill levels, and a degree of "working poverty".

One way of minimising the adverse side effects is to try to ensure that the general process of wage determination is not unduly influenced by high productivity growth emanating from a relatively small section of the economy (in terms of employment share). Another complementary approach would be to try to secure a more balanced spread of productivity growth; policy should focus on raising efficiency in lagging sectors, especially the non-traded goods sectors, where restrictive practices and restraints on competition tend to be more abundant. The general application of the range of policies recommended by the White Paper to reduce tax and other disincentives to the use of labour would also help.

To conclude on pay issues, the White Paper makes large claims for what could be achieved by a reduction in statutory charges equivalent to 1-2% of GDP. To the extent that insider power is important, care needs to be taken to prevent the benefits of such tax cuts simply accruing to insiders. Furthermore, it is not credible that the impact claimed could be achieved in the periphery as a result of

[38]In the Portuguese HERMIN model, the Phillips curve effect in the service sector is six times larger than the effect in manufacturing, illustrating that a dual labour market already exists [Modesto and Neves (1993)].

such a change. Statutory charges on labour are already much lower in the four peripheral states than in all other EU states with the exception of the UK. The White Paper's own figures are that while the EU average as a percent of GDP is 23.5%, the ratio in Greece is 16.5%, Ireland 17.8%, Portugal 16.0%, and Spain 20.4%.

Furthermore, an application by Fitz Gerald and McCoy (1992) of the HERMES model to simulate the effects in Ireland of a unilateral CO_2 tax matched by a general cut in social insurance contributions, yielded an employment elasticity of under 0.4. A targeted cut of the kind recommended in the White Paper would undoubtedly yield more, but on the other hand in a multilateral application of the policy, Ireland's wage competitiveness would not improve relative to other EU countries. Obviously in the periphery, as elsewhere, tax policy should seek to remove needless disincentives to the take-up of low-paid employment, but such an approach cannot be regarded as reaching to the core of the underdevelopment problems of the periphery.

6.2 Human resources and physical infrastructure

The White Paper proposals on education and training are very relevant to the periphery. All four states emerge as below-average on various measures of human capital, such as the proportion of adolescents in education and training, or the ratio of research scientists and engineers per 1,000 of the labour force, with the lowest positions occupied by Greece and Portugal. The White Paper is also concerned about the uneven distribution of education and training resources, with those from deprived backgrounds likely to benefit least - a factor that is also significant in the periphery. The more difficult questions to determine, however, relate to what kinds of education and training are likely to be most effective, and how to ensure that they are of good quality [Grubb (1994)].

The White Paper recommendation that a significant proportion of expenditure on unemployment compensation be re-allocated to training, even if it were feasible, would have limited impact in Portugal and Greece. In Portugal, measured unemployment is quite low, while in Greece unemployment compensation is minimal, so that registered unemployment is much less than unemployment measured on a Labour Force Survey basis, and of course even the latter measure does not encapsulate the low participation rate and high degree of underemployment.

Besides lagging behind in terms of human capital, the peripheral regions, as noted earlier, also have inadequate levels of physical infrastructure. These problems of course are being addressed at present by the CSF programmes. With regard to the

structural adjustments that we have identified as being in store for Greece and Portugal, the burden of adjustment would be substantially eased were an adequate level of infrastructure already in place. Not only would this stimulate the inflow of multinational investment that these economies will require, it would also aid restructuring along the lines of traditional comparative advantage.

6.3 The New Development Model

Further developmental opportunities are suggested by the White Paper's "new development model" for the Community. A clear implication of this model is the need to discourage environmentally damaging concentrations of economic activity and to encourage dispersal of industrial location. Indeed the White Paper recognises that the internal relocation of economic activities will contribute to the most efficient exploitation of environmental resources inside the Community as well as to a reduction of the far too-high environmental pressure in some areas. However, the dynamics of the internal market, if allowed to operate unchecked could exacerbate that position in some respects by facilitating even greater regional concentration of certain industries in existing highly developed areas.

This danger would be greater if the present structure of national industrial subsidies is not rationalised [C.E.C. (1992)]. These are used extensively in most member states and, measured in relation to employment, are often much higher in the richer countries than in the poorer countries. In total in the Community they amount to several times the level of Structural Fund support for the poorer countries. Some of these subsidies in the rich member states (e.g. to indigenous mining) may not adversely affect the poorer members: indeed they may reduce the competitiveness of the richer members! But others, such as support for mobile international firms, serve to substantially negate the development efforts of the poorer member states. Moreover they involve a huge windfall transfer to mobile international companies since the competing subsidies probably have more influence on the location than on the volume of such investment.

Only at Community level would it be possible to rationalise this position. Given the strong political interests involved, it would be naive to expect that appropriate regional policies will emerge at Community level simply because the intellectual case for them is reinforced. Nevertheless the new model does strengthen that case. It also elevates the perception of the regional issue, which is sometimes seen merely as a backdrop to pleas for hand-outs on the part of the periphery, to an integral part of the progressive policy for the entire Community.

7. Conclusions

In this paper we have argued that the labour-market problems of the periphery, in terms both of unemployment and underemployment, are substantially greater than those of the core EU economies. We identified a number of characteristics of peripheral regions that generate this outcome. Many of the factors that define "peripherality" also place extra burdens of adjustment on the labour market. Among these factors are the high share of employment in the declining agricultural sector, the excess sensitivity of peripheral industry to the international business cycle, the difficulties faced by labour abundant regions in adjusting to free trade, and the deficiencies in both physical and human capital infrastructure that magnify these difficulties considerably.

We argued that many econometric treatments of labour market issues are not designed to capture these factors. The Layard-Nickell-Jackman approach, in considering a single sector economy, not only glosses over the distinction between agriculture, industry and services, but also the structural differences between traditional and modern industry that are crucial now or soon will be in all of the peripheral regions. The Commission's QUEST model we found to be overly focused on demand-side issues, rather than the supply-side issues that dominate macroeconomic developments in the peripheral small open economies. These are the primary focus of the more recent HERMIN model constructed specifically for the EU periphery, but which is itself not without problems.

Just as the QUEST model is understandably designed with the more populous core regions in mind, so the specific recommendations in the Commission's *White Paper* are more appropriate for the core than for the periphery. Since labour productivity in the latter regions will continue to converge to the levels applying elsewhere, employment and output growth targets there need to be considerably higher. The White Paper's recommendation on cuts in statutory charges on labour is unlikely to be sufficient to generate this employment growth. Nor is such growth likely to be aided in the short run by the fiscal contractions entailed by the Maastricht criteria.

What is ultimately required to overcome the factors generating peripherality? As the *One Market, One Money* report reveals, these factors are not primarily geographic. They are infrastructural. Adequate levels of human capital and physical infrastructure are required if industry in peripheral regions is to be able to compete internationally, and if the peripheral regions themselves are to be able to compete for the available flows of multinational investment. While these infrastructures are being put in place the periphery faces a stark choice. It may follow the "European model", entailing convergence in terms of social welfare

entitlements, employment protection etc., or it may follow the "American model" of reliance on the free market. The former path is likely to hasten the demise of low productivity firms, and may result in high long-term unemployment rates, as in Spain and Ireland, while the latter path will, in the situation in which the periphery finds itself, lead to a worsening of the distribution of income, and the continuance of very low wage sectors in otherwise affluent economies.

THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE
4 Burlington Road
Dublin 4
Ireland
Tel: 00 353 1 667 1525
Fax: 00 353 1 668 6231
email: jbradley@esri.ie

References

Barro R., and X. Sala-i-Martin (1995) *Economic Growth,* New York, McGraw-Hill.

Barry, F. (1994). "Peripherality in Economic Geography and Modern Growth Theory: Reflections from the Irish Experience", Working Paper, Centre for Economic Research, University College Dublin.

Barry, F. and J. Bradley (1991). "On the Causes of Ireland's Unemployment", *Economic and Social Review*, 22, No. 4, 253-286.

Barry, F., J. Bradley and F. Duggan (1996). 'Economic Structure and Structural Change in the EU periphery', in B. Fynes and S. Ennis (eds) *Competing from the Periphery,* Dublin, Oaktree Press.

Barry, F., J. Bradley, A. Hannan, J. McCartan and S. Sosvilla-Rivero (1996) 'Single Market Review 1996: Aggregate and Regional Impacts: the cases of Greece, Ireland, Portugal and Spain'. Report prepared for European Commission DGXV, Brussels, September 1996.

Beyers, W.J. Tofflemire, H. Stranahan and E,. Johnson (1986). *The Service Economy: Understanding Growth of Producer Services in Central Puget sound Region,* Seattle, Central Puget Sound Economic Development District.

Bradley, J. and J. Fitz Gerald (1988). "Industrial Output and Factor Input Determination in an Econometric Model of a Small Open Economy", *European Economic Review*, 32, pp. 1227-41

Bradley, J., K. Whelan and J. Wright (1993). *Stabilisation and Growth in the EC Periphery: A Study of the Irish Economy*, Aldershot, Avebury.

Bradley, J., J-A Herce and L. Modesto (1995). 'Modelling in the EU periphery, The HERMIN Project', *Economic Modelling,* Special Edition.

Bradley, J. and K. Whelan (1996). 'the Irish Expansionary fiscal contraction: a tale from one small European economy', to appear, *Economic Modelling.*

Brandsma, A., J. op de Beke, L. O'Sullivan and W. Roger (1991). "QUEST - A Macroeconomic Model for the Countries of the European Community as part of the World Economy", *European Economy*, No. 47 March, 163-237.

Cecchini, P. (1988). *The European Challenge: 1992: The Benefits of a Single Market*, London: Wildwood House

Commission of the European Communities (1990): "One Market, One Money: An Evaluation of the Potential Benefits and Costs of Forming an Economic and Monetary Union", *European Economy*, 44.

Commission of the European Communities (1992). *Third Survey on State Aids in the European Community in the Manufacturing and Certain Other Sectors*, Luxembourg: Office of Official Publications

Commission of the European Communities (1993a). "Growth, Competitiveness, Employment: The Challenges and Ways Forward into the 21st Century", *Bulletin of the European Communities*, Supplement 6/93, Brussels

Commission of the European Communities (1993b). "Broad Economic Policy Guidelines and Convergence Report", *European Economy*, No. 55.

Commission of the European Communities (1993c). Social Protection in Europe, Directorate General for Employment, Industrial Relations and Social Affairs, Brussels

Commission of the European Communities (1993d). "The Economic and Financial Situation in Italy", *European Economy*, No. 1

Commission of the European Communities (1993e). "Annual Report: Statistical Annex", *European Economy*, No. 54.

Commission of the European Communities (1996). "Annual Report: Statistical Annex", *European Economy.*

Dreze, J. and C. Bean (eds.) (1990). *Europe's Unemployment Problem*, Massachusetts, The MIT Press.

Duggan, D. (1995) 'The Core and Peripheral Regions of European Union: Distinctive Characteristics and Core-Periphery Comparisons', M.A. Thesis, Dept of Economics, UCD, Dublin.

Elmeskov, J. (1993) "High and Persistent Unemployment: Assessment of the Problem and its Causes", Working Paper No. 132, OECD Economics Department.

Emerson, Michael, M. Aujean, M. Catinat, P. Goybet and A. Jacquemin (1988). *The Economics of 1992: The EC Commission's Assessment of the Economic Effects of Completing the Internal Market*, Oxford, Oxford University Press.

EUROSTAT (1992). *Europe in Figures*, 3rd edition, Luxembourg, Statistical Office of the European Communities.

EUROSTAT (1993). *Labour Force Survey 1983-1991*, Luxembourg, Statistical Office of the European Communities.

EUROSTAT (1996). *Labour Force Survey 1980-1994*, Luxembourg, Statistical Office of the European Communities.

Fitz Gerald, John and McCoy, Daniel (1992). "The Macroeconomic Implications for Ireland", in The Economic Effects of Carbon Taxes, Policy Research Series No. 14, Dublin, The Economic & Social Research Institute.

Grubb, D. (1994)."Direct and indirect effects of active labour market policies in OECD countries", in R. Barrell (ed.), *The UK Labour market: Comparative Aspects and Institutional Developments*, Cambridge, Cambridge University Press

Hansen, N., (1990) 'Do producer Services Induce Regional Economic Development?', *Journal of Regional Science,* Vol. 30, No. 4. 1990, pp.465-476.

Heffernan, S., and P. Sinclair (1990). *Modern International Economics,* Oxford, Basil Blackwell

Keeble, D., J. Offord and S. Walker. (1988) *Peripheral Regions in a Community of 12 Member States,* Luxembourg, Office for Official Publications of the European Communities.

Krugman, P. (1987) "Economic Integration in Europe: Some Conceptual Issues", in T. Padoa-Schioppa (ed.), *Efficiency, Stability and Equity*, Oxford, Oxford University Press.

Larre, B., and R. Torres (1991) "Is Convergence a Spontaneous Process? The Experience of Spain, Portugal and Greece", *OECD Economic Studies*, 16, pp. 169-198.

Layard, R., Nickell, S. and Jackman, R. (1991). *Unemployment: Macroeconomic Performance and the Labour Market*, Oxford, Oxford University Press.

Lindbeck, A. (1979) "Imported and structural inflation and aggregate demand: the Scandinavian model reconstructed', in Lindbeck, A. (ed.) *Inflation and employment in open economies,* Amsterdam, North Holland.

MacDougall, D. (1977). *Report of the Study Group on the Role of Public Finance in European Integration,* Brussels, Commission of the European Communities.

Martin, P. and C. Rogers (1994) "Trade Effects of Regional Aid", CEPR Discussion Paper 910. London.

Modesto, L. and P.D. Neves (1993). HERMIN-P4: A Four-Sector Structural Model of the Portuguese Economy, Technical Paper, Centro de Estudos Aplicados, Universidade Catolica Portuguesa, Lisbon, December

National Economic and Social Council (NESC) (1989). Ireland in the European Community: Performance, Prospects and Strategy, Report No. 88, Dublin, NESC.

Neven, D. (1990) "EEC Integration Towards 1992: Some Distributional Aspects", *Economic Policy*, 10, 14-62.

Newell, A. and Symons, J. (1990). "The Causes of Ireland's Unemployment", *The Economic & Social Review*, 21, 409-429.

OECD (1993a). *OECD Economic Surveys: Greece*, Paris, OECD.

OECD (1993b). *OECD Economic Surveys: Ireland*, Paris, OECD.

OECD (1993c). *OECD Economic Surveys: Spain*, Paris, OECD.

OECD (1993d). *OECD Economic Surveys: Portugal*, Paris, OECD.

OECD (1996a). *OECD Economic Surveys: Greece*, Paris, OECD.

OECD (1996b) *OECD Economic Surveys: Portugal*, Paris, OECD.

OECD (1996c). *OECD Economic Surveys: Spain*, Paris, OECD.

OECD (various). *International Direct Investment Statistics Yearbook*, OECD, Paris.

O'Grada, C., and K. O'Rourke. (1994)'Irish Economic Growth, 1945-1988'., CEPR, Discussion Paper No. 975.

O'Malley, E. (1992) 'Industrial Structure and Economies of Scale on the Context of 1992', in *The Role of Structural Funds: Analysis of the Consequences for Ireland in the context of 192,* Policy Research Series Paper No. 13 Dublin, The Economic and Social Research Institute.

Prados de la Ecosura, L., T. Daban Sanchez and J. Sanz Oliva (1993). 'De Te Fabula Narratur? Growth, Structural Change and Convergence in Europe, 19-20th Centuries' mimeo, Universidad Carlos III, Madrid.

Pratten C., (1988) 'A Survey of Economies of Scale' in Vol. 2 of *Studies on the Economics of Integration: Research on the "Costs of non-Europe',* Commission of the European Communities, Brussels, Commission of the European Communities, pp. 23-39.

Walsh, B.M. (1974). "Expectations, Information, and Human Migration: Specifying an Econometric Model of Irish Migration to Britain", *Journal of Regional Science*, 14, 107-120.

Walsh B. (1993) 'The Contribution of Human Capital Formation to Post-War Economic Growth in Ireland', CEPR Discussion Paper No. 819.

Wier T., (1992) *Service Sector Development in a Hierarchy of Central Places: A Regional Analysis of 7 Southern States,* unpublished Ph. D. thesis, University of Tennessee.

EUI WORKING PAPERS

EUI Working Papers are published and distributed by the
European University Institute, Florence

Copies can be obtained free of charge
– depending on the availability of stocks – from:

The Publications Officer
European University Institute
Badia Fiesolana
I-50016 San Domenico di Fiesole (FI)
Italy

Please use order form overleaf

Publications of the European University Institute

To

The Publications Officer
European University Institute
Badia Fiesolana
I-50016 San Domenico di Fiesole (FI) – Italy
Telefax No: +39/55/4685 636
e-mail: publish@datacomm.iue.it
http://www.iue.it/

From

Name .....
Address.....
.....
.....
.....
.....

❒ Please send me a complete list of EUI Working Papers
❒ Please send me a complete list of EUI book publications
❒ Please send me the EUI brochure Academic Year 1997/98

Please send me the following EUI Working Paper(s):

No, Author .....
Title: .....
No, Author .....
Title: .....
No, Author .....
Title: .....
No, Author .....
Title: .....

Date .....

Signature .....

Working Papers of the Robert Schuman Centre

Published since 1996

RSC No. 97/1
Donatella della PORTA/Herbert REITER
The Policing of Mass Demonstration in Contemporary Democracies
The Policing of Protest in Contemporary Democracies

RSC No. 97/2
Robert REINER
The Policing of Mass Demonstration in Contemporary Democracies
Policing, Protest and Disorder in Britain

RSC No. 97/3
Clark McPHAIL/John McCARTHY/David SCHWEINGRUBER
The Policing of Mass Demonstration in Contemporary Democracies
Policing Protest in the United States: From the 1960s to the 1990s

RSC No. 97/4
Olivier FILLIEULE/Fabien JOBARD
The Policing of Mass Demonstration in Contemporary Democracies
The Policing of Protest in France: Towards a Model of Protest Policing

RSC No. 97/5
Dominique WISLER/Hanspeter KRIESI
The Policing of Mass Demonstration in Contemporary Democracies
Public Order, Protest Cycles and Political Process: Two Swiss Cities Compared

RSC No. 97/6
P.A.J. WADDINGTON
The Policing of Mass Demonstration in Contemporary Democracies
Controlling Protest in Contemporary, Historical and Comparative Perspective

RSC No. 97/7
Herbert REITER
The Policing of Mass Demonstration in Contemporary Democracies
Police and Public Order in Italy, 1944-1948. The Case of Florence

RSC No. 97/8
Oscar JAIME-JIMENEZ
The Policing of Mass Demonstration in Contemporary Democracies
The Policing of Social Protest in Spain: From Dictatorship to Democracy

RSC No. 97/9
Martin WINTER
The Policing of Mass Demonstration in Contemporary Democracies
Police Philosophy and Protest Policing in the Federal Republic of Germany, 1960-1990

RSC No. 97/10
Rocco DE BIASI
The Policing of Mass Demonstration in Contemporary Democracies
The Policing of Hooliganism in Italy

RSC No. 97/11
Donatella della PORTA
The Policing of Mass Demonstration in Contemporary Democracies
Police Knowledge and Public Order: Some Reflections on the Italian Case

RSC No. 97/12
Patrick A. McCARTHY
Positionality, Tension and Instability in the UN Security Council

RSC No. 97/13
Andrea LENSCHOW
Greening the EC Regional and Cohesion Funds. Explaining Variation Across Similar Policy Areas

RSC No. 97/14
Richard SINNOTT/Nessa WINSTON
Farmers, the CAP and Support for European Integration

RSC No. 97/15
Kees van KERSBERGEN
Double Allegiance in European Integration: Publics, Nation-States, and Social Policy

*out of print

RSC No. 97/16
Michael J. ARTIS/Wenda ZHANG
The Linkage of Interest Rates Within the EMU

RSC No. 97/17
Dimitri G. DEMEKAS/
Zenon G. KONTOLEMIS
Unemployment in Greece:
A Survey of the Issues

RSC No. 97/18
Olivier FILLIEULE
«Plus ça change, moins ça change» - Demonstrations in France During the Nineteen-Eighties

RSC No. 97/19
Tanja A. BÖRZEL
Policy Networks - A New Paradigm for European Governance?

RSC No. 97/20
Vladimir MIKHALEV
Poverty Alleviation in the Course of Transition: Policy Options for Russia

RSC No. 97/21
Susan SENIOR NELLO
Applying the New Political Economy Approach to Agricultural Policy Formation in the European Union

RSC No. 97/22
Repatriation. Legal and Policy Issues Concerning Refugees from the Former Yugoslavia
Proceedings of a Roundtable Discussion, organised by the Working Group on Refugees (RSC)

RSC No. 97/23
Simon BAGSHAW
Benchmarks or Deutschmarks? Determining the Criteria for the Repatriation of Refugees to Bosnia and Herzegovina

RSC No. 97/24
Sven BISLEV
European Welfare States: Mechanisms of Convergence and Divergence

RSC No. 97/25
Pascal SCIARINI/Ola LISTHAUG
Single Cases or a Unique Pair?
The Swiss and Norwegian No to Europe

RSC No. 97/26
D. LESLIE/D. BLACKABY/ S. DRINKWATER/P. MURPHY
Unemployment, Ethnic Minorities and Discrimination

RSC No. 97/27
Bernhard WINKLER
Maastricht Games and Maastricht Contracts

RSC No. 97/28
Horst SIEBERT
Labor Market Rigidities and Unemployment in Europe

RSC No. 97/29
Ute COLLIER
Prospects for a Sustainable Energy Policy in the European Union

RSC No. 97/30
John MYLES/Paul PIERSON
Friedman's Revenge: The Reform of 'Liberal' Welfare States in Canada and the United States

RSC No. 97/31
Liesbet HOOGHE/Gary MARKS
The Making of a Polity: The Struggle over European Integration

RSC No. 97/32
Pascal SCIARINI/Simon HUG/
Cédric DUPONT
Example, Exception or Both? Swiss National Identity in Perspective

RSC No. 97/33
Dolores O'REILLY
From State-Control to EC Competence. Air Transport Liberalisation

RSC No. 97/34
Giuliana GEMELLI
From Imitation to Competitive-Cooperation. Ford Foundation and Management Education in Western Europe (1950's-1970's)
Vol. I

RSC No. 97/35
Giuliana GEMELLI
From Imitation to Competitive-Cooperation. Ford Foundation and Management Education in Western Europe (1950's-1970's)
Vol. II

***out of print**

RSC No. 97/36
Martin RHODES
Globalisation. Labour Marketsand Welfare States: A Future of 'Competitive Corporatism'?

RSC No. 97/37
Jacques MÉLITZ/Axel A. WEBER
The Costs/Benefits of a Common Monetary Policy in France and Germany and Possible Lessons for Monetary Union

RSC No. 97/38
Jürgen R. GROTE
Interorganizational Networks and Social Capital Formation in the *South of the South*

RSC No. 97/39
Jean-Paul FITOUSSI
European Unemployment: Macroeconomic Aspects. *Substituabilities vs Complementarities Between Structural and Macroeconomic Policies*

RSC No. 97/40
Ray BARRELL/James SEFTON
European Unemployment: Macroeconomic Aspects. *Fiscal Policy, Real Exchange Rates and Monetary Union*

RSC No. 97/41
Peter SINCLAIR/Nicholas HORSEWOOD
European Unemployment: Macroeconomic Aspects. *Has the Phillips Curve Been Reborn?*

RSC No. 97/42
Riccardo FAINI/Giampaolo GALLI/Pietro GENNARI/Fulvio ROSSI
European Unemployment: Macroeconomic Aspects. *An Empirical Puzzle: Falling Migrations and Growing Unemployment Differentials among Italian Regions*

RSC No. 97/43
Peter WESTAWAY
European Unemployment: Macroeconomic Aspects. *What Determines the Natural Rate of Unemployment? And What Does Not?*

RSC No. 97/44
Neale O. KENNEDY
European Unemployment: Macroeconomic Aspects. *Unemployment in the EU and the US: A Macroeconomic Perspective*

RSC No. 97/45
Bruno CHIARINI/Paolo PISELLI
European Unemployment: Macroeconomic Aspects. *Wage Setting, Wage Curve and Phillips Curve: The Italian Evidence*

RSC No. 97/46
Rod CROSS/Julia DARBY/ Jonathan IRELAND
European Unemployment: Macroeconomic Aspects. *Hysteresis and Ranges or Intervals for Equilibrium Unemployment*

RSC No. 97/47
Frank BARRY/John BRADLEY/ Joanne McCARTAN
European Unemployment: Macroeconomic Aspects. *Unemployment in the EU Periphery: Problems and Prospects*

*out of print